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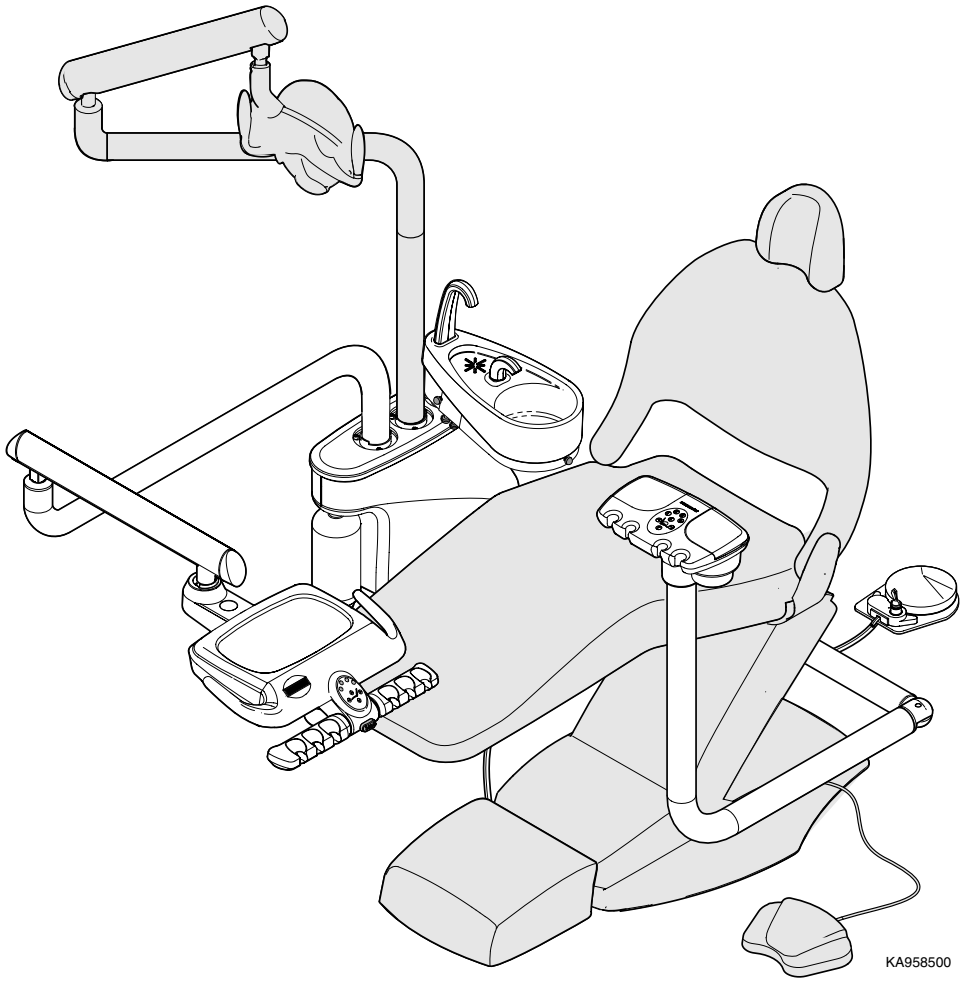
Delivery Systems

MIDMARK®

ProCenter and Whip Delivery System

Service and Parts Manual

Serial Number Prefixes:
NV & RF



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SF-1621

Part No. 004-0282-00 Rev. E (1/01/04)

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General Safety Instructions

Safety First: The primary concern of Midmark Corporation is that this delivery system is maintained with the safety of the patient and staff in mind. To assure that services and repairs are completed safely and correctly, proceed as follows:

(1) Read this entire manual before performing any services or repairs on this delivery system.

(2) Be sure you understand instructions contained in this manual before attempting to service or repair delivery system.

Safety Alert Symbols

Throughout this manual are safety alert symbols that call attention to particular procedures. These items are used as follows:

DANGER

A DANGER is used for an imminently hazardous operating procedure, practice, or condition which, if not correctly followed, will result in loss of life or serious personal injury.

WARNING

A WARNING is used for a potentially hazardous operating procedure, practice, or condition which, if not correctly followed, could result in loss of life or serious personal injury.

CAUTION

A CAUTION is used for a potentially hazardous operating procedure, practice, or condition which, if not correctly followed, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

EQUIPMENT ALERT

An EQUIPMENT ALERT is used for an imminently or potentially hazardous operating procedure, practice, or condition which, if not correctly followed, will or could result in serious, moderate, or minor damage to unit.

NOTE

A NOTE is used to amplify an operating procedure, practice or condition.

Warranty Instructions

Refer to Midmark “Limited Warranty” printed in the Operation Manual for warranty information. Failure to follow guidelines listed below will void the warranty and/or render the delivery system unsafe for operation.

- In event of a malfunction, do not attempt to use delivery system until necessary repairs have been made.
- Do not attempt to disassemble delivery system, replace malfunctioning or damaged components, or perform adjustments unless you are one of Midmark’s authorized service technicians.
- Do not substitute parts of another manufacturer when replacing inoperative or damaged components. Use only Midmark replacement parts.

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SECTION I
GENERAL INFORMATION

1.1 Scope of Manual

This manual contains detailed troubleshooting, scheduled maintenance, and service instructions for Midmark Delivery System components. This manual is intended to be used by authorized service technicians only.

1.2 How to Use Manual

A. Manual Use When Performing Scheduled Maintenance

(1) Perform inspections and services listed in Scheduled Maintenance Chart. (Refer to para 3.1).

(2) If a component is discovered to be faulty or out of adjustment, replace or adjust component as necessary. Refer to Section IV for common service procedures.

B. Manual Use When Delivery System Component Is Malfunctioning And Cause Is Unknown

(1) Perform troubleshooting procedures listed in Troubleshooting Guide. (Refer to Section II).

(2) If a component is discovered to be faulty or out of adjustment, replace or adjust component as necessary. Refer to Section IV for common service procedures.

C. Manual Use When Damaged Component Is Known

(1) Replace or adjust damaged component(s). Refer to Section IV for common service procedures.

1.3 Description of Delivery System

A. General Description

Midmark delivery systems are intended to provide dental professionals with air & water to operate dental handpieces, syringes, and Midmark authorized accessories during dental examinations and procedures.

Systems are available in various styles and configurations *[Procenter-style (console, L/R, & 12:00 casework mounted), & Whip-style (console & L/R mounted)]*.

B. Basic Theory of Operation: ProCenter-style Delivery Units (Figure 1-1)

[Refer to Section V for tubing diagrams]

Master ON/OFF Switch *(1, FIgure 1-1)*

With the air manual shut-off valve open, unregulated air is supplied to the Master ON/OFF switch on the delivery unit *[thru 1/8 in. purple tubing]*. When the Master ON/OFF switch is turned ON, air passes thru the ON/OFF switch valve to the pilot air manifold *[thru 1/8 in. red tubing]*. The pilot air manifold directs the flow of air to the handpiece holder valves, flex arm unlock buttons, and back to the air and water master pilot shut-off valves in the junction box *[thru 1/8 in. red tubing]*.

Master Pilot Shut-Off Valves

The air from the Master ON/OFF switch opens the air and water master pilot shut-off valves allowing air/water to pass thru the master pilot shut-off valves to the air/water regulators.

Air / Water Regulators

The air regulator w/gauge provides air to the foot control throttle valve *[thru 1/4 in. grey ribbed tubing]* and air to the syringe and cuspidor *[thru 1/8 in. yellow tubing].* This regulator should be set at 80 PSI to optimize performance.

The air regulator w/o gauge provides 40 PSI to pressurize the water bottle *[thru 1/8 in. brown tubing]*. This regulator is preset at the factory and should not be adjusted.

The water regulator provides “city” water to the City/Bottle water selector valve *[thru 1/8 in. blue tubing].* This regulator should be set at 40 PSI to optimize performance.

Water Selector Switch Valve *(2, Figure 1-1)*

Distilled water is supplied to the selector valve from the water bottle *[thru 1/8 in. blue tubing].* City water is supplied to the selector valve from the water regulator *[thru 1/8 in. blue tubing]*.

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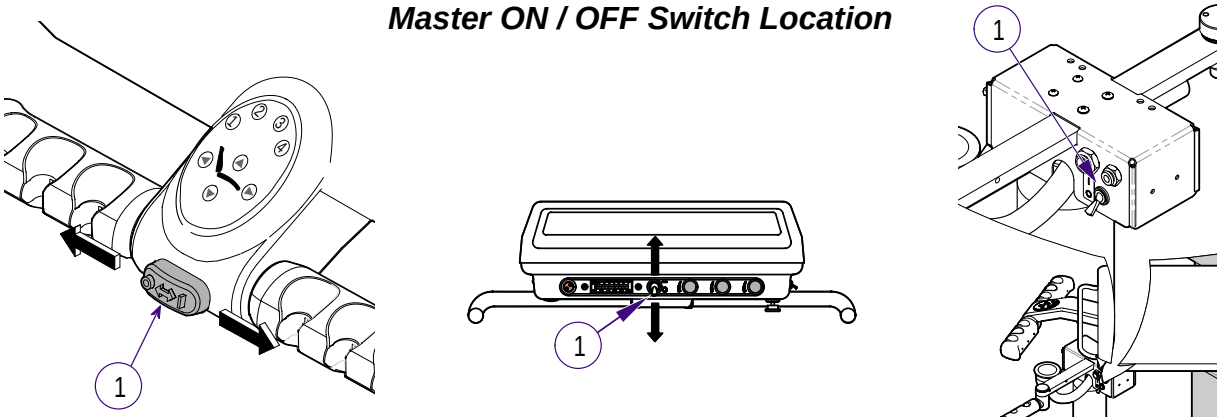
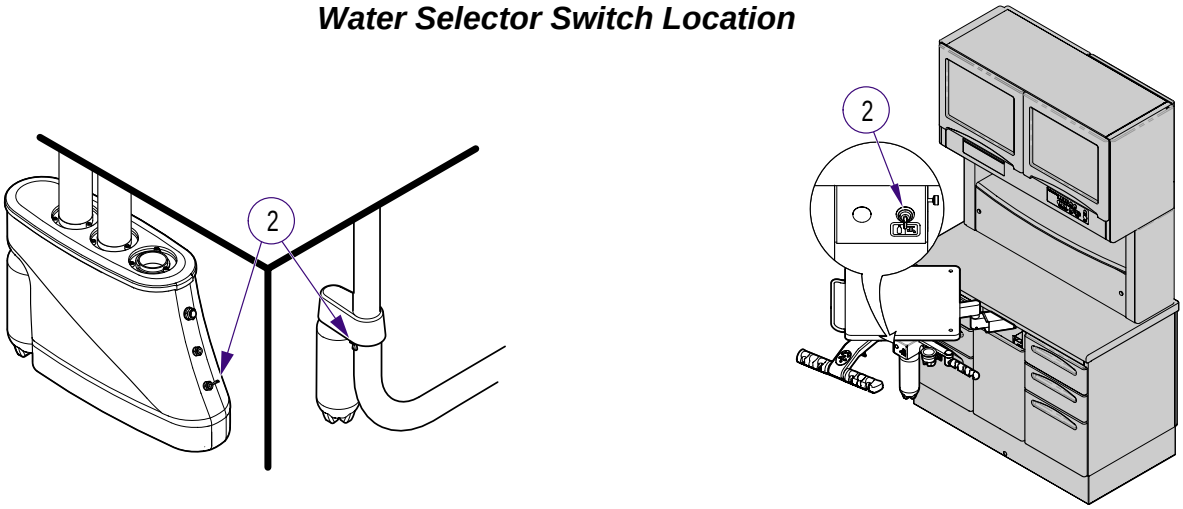
SECTION I
GENERAL INFORMATION

Master ON / OFF Switch Location



Water Selector Switch Location



Adjustment Knob Location

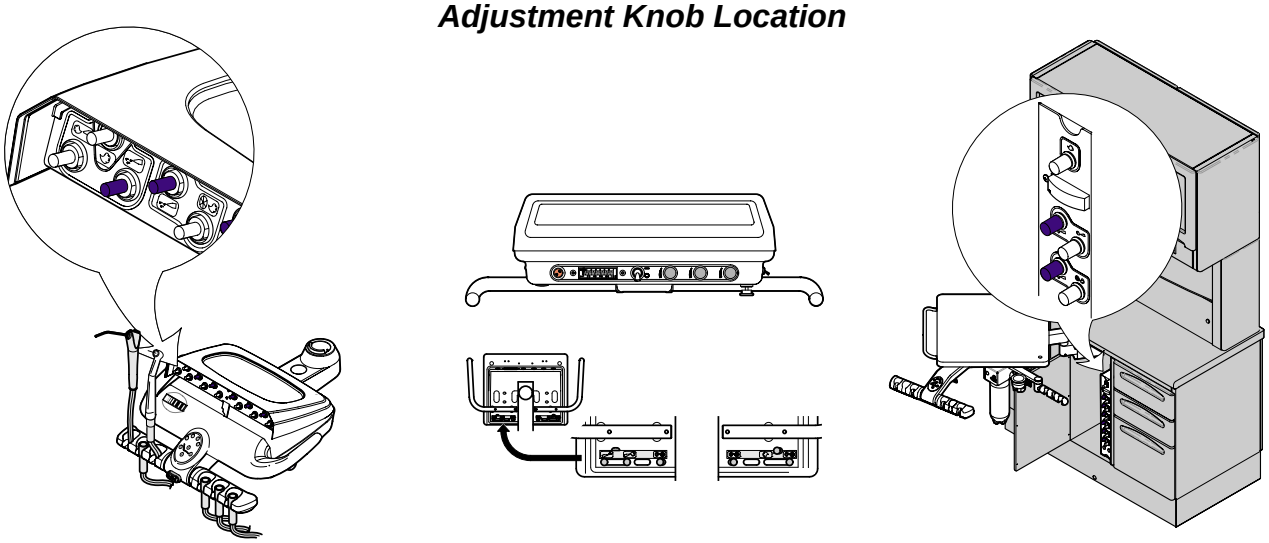


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Figure 1-1. Delivery Unit Control Locations

With the selector valve toggle switch in City ***or*** Bottle position, [city water ***or*** distilled water] flows thru the selector valve to the water supply manifold *[thru 1/8 in. blue tubing]*. The water supply manifold directs the flow of water to the syringe adjustment valve and the handpiece adjustment valves *[thru 1/8 in. blue tubing].*
NOTE: *The outgoing water line from the selector valve is used for both City and Bottle water.*

Foot Control Assembly

When the foot control pedal is depressed, the throttle valve *[in foot control]* opens, and supplies drive air and coolant air for the handpieces.

Drive air is supplied to the handpiece supply drive air manifold *[thru 1/4 in. clear tubing]*. The handpiece supply drive air manifold directs the flow of air to the handpiece drive air adjustment valves *[thru 1/4 in. clear tubing]*. The drive air is regulated by the adjustment valves then directed to the kink valves *[thru 1/4 in. clear tubing]*. Coolant air is supplied to the handpiece coolant air adjustment valve *[thru 1/8 in. green tubing].* The coolant air is regulated by the adjustment valve then directed to the kink valves *[thru 1/8 in. green tubing].*

When the Wet / Dry toggle valve *[on foot control]* is switched to the Wet position, pilot air for coolant water is supplied to the kink valve manifolds *[thru 1/8 in. orange tubing].* The kink valve manifolds direct the pilot air to the coolant water adjustment valves *[thru 1/8 in. white tubing]*. The pilot air opens the coolant water adjustment valves, allowing water to flow to the kink valves *[thru 1/8 in. blue tubing]*.

Kink Valve Assembly

When a handpiece is removed from holder, the activation lever is released. This causes the (normally closed) handpiece holder valve to stop the airflow to the kink valve manifold *[thru 1/8 in. purple tubing]* and allows the kink valve to open. When the kink valve opens, coolant air, drive air, and coolant water flow thru the kink valve to the handpiece.

Adjustment Knobs *(See Figure 1-1 for location)*

Allow user to adjust air & water flow to instruments.

C. *Basic Theory of Operation*
Whip-style Delivery Units (Figure 1-1)
[Refer to Section V for diagrams]

Master ON/OFF Switch *(1, Figure 1-1)*

When the Master ON/OFF switch is turned ON, air passes through the ON/OFF switch valve to the pilot valve block.

Pilot Valve Block

The pilot valve block directs the flow of air, city water, and self contained water throughout the system

Water Selector Valve *(2, Figure 1-1)*

Distilled water is supplied to the selector valve from the water bottle *[thru 1/8 in. blue tubing].* City water is supplied to the selector valve from the water regulator *[thru 1/8 in. blue tubing]*.

With the selector valve toggle switch in City ***or*** Bottle position, [city water ***or*** distilled water] flows thru the selector valve to the water supply manifold *[thru 1/8 in. blue tubing]*. The water supply manifold directs the flow of water to the syringe adjustment valve and the handpiece adjustment valves *[thru 1/8 in. blue tubing].*
NOTE: *The outgoing water line from the selector valve is used for both City and Bottle water.*

Foot Control Assembly

The foot control supplies drive air and coolant water to handpieces. When the water ON/OFF switch is turned ON, the coolant water valve opens allowing coolant water to flow to handpieces.

Handpiece Operation

When a handpiece is lifted, the whip assembly pivots causing a pilot valve to open. The open pilot valve allows air to flow to the kink valve assembly.

Kink Valve Assembly

When the pilot valve opens, air flows to the kink valve causing it to open. This allows coolant air, drive air, and coolant water to flow through the kink valve to the handpiece.

Adjustment Knobs *(See Figure 1-1 for location)*

Allow user to adjust air & water flow to instruments.

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SECTION I
GENERAL INFORMATION

D. Basic Theory of Operation

Cuspidor (Figure 1-2)

[Refer to Section V for diagrams]

Supply Water

With the water manual shut-off valve *[in junction box]* open and the Master ON/OFF switch *[on delivery unit]* ON, the master pilot shut-off valve supplies unregulated water to the cup fill flow control valve and the bowl flush control pinch valve in the cuspidor *[thru 1/4 in. blue tubing]*.

The cup fill flow control valve regulates the supply water, then directs the water to the cup fill water valve *[thru 1/4 in. blue tubing]*.

The bowl flush control pinch valve regulates the supply water, then directs the water to the bowl flush water valve *[thru 1/4 in. blue tubing]*.

Supply Air

With the air manual shut-off valve *[in junction box]* open and the Master ON/OFF switch *[on delivery unit]* ON, the air regulator w/gauge supplies 80 PSI to the two manually operated cup filler valves, cup filler primary air valve, bowl flush solenoid, and the manually operated bowl flush valve.

Cup Fill

When one of the manual cup fill valve buttons (1, Figure 1-2) is depressed, air is supplied to the (normally open) cup fill pilot air valve *[thru 1/8 in. white tubing]*. Air passes thru this valve to the cup fill timing adjustment valve and to the (normally closed) cup fill primary air valve *[thru 1/4 in. yellow tubing]*. The air opens the normally closed valve and supplies pilot air to the cup fill water valve and back to the (normally open) cup fill pilot air valve *[thru 1/8 in. red tubing]*. The pilot air to the cup fill water valve opens the valve and allows water to flow to the cup fill faucet. The pilot air to the (normally open) cup fill pilot air valve closes the valve, trapping air in the 1/4 in. yellow tubing between the pilot and primary air valves. This allows the cup fill faucet to run until air pressure in the 1/4 in yellow tubing is “bled off” thru the cup fill timing adjustment valve.
NOTE: *The cup fill timing adjustment valve may be adjusted to shorten/lengthen the amount of time it takes to bleed off air pressure.*

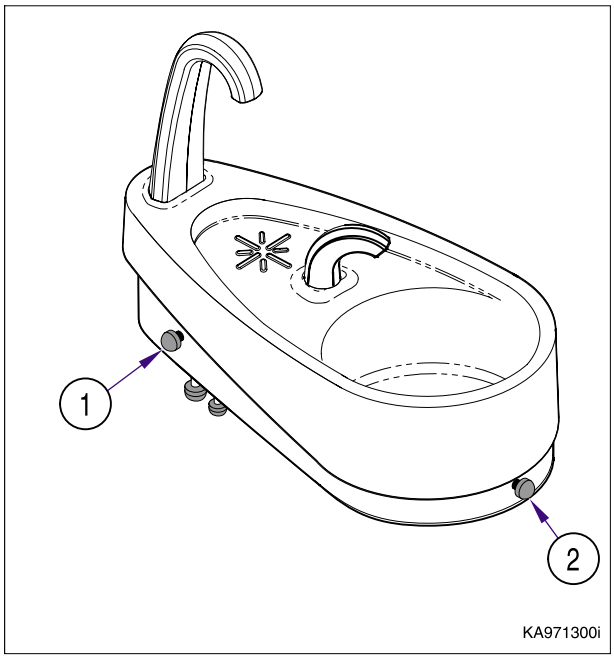

Figure 1-2. Cup Fill / Bowl Flush Buttons

Bowl Flush

Manual Push Button Operation
When the manual bowl flush valve button (2, Figure 1-2) is depressed, pilot air is supplied to the bowl flush water valve as well as the bowl flush timing adjustment valve *[thru 1/8 in. red tubing]*. The pilot air opens the bowl flush water valve allowing water to flow to the bowl flush faucet. The bowl flush timing adjustment valve gradually bleeds off air pressure from the bowl flush water valve. When air pressure is removed from the bowl flush water valve, the valve closes and water flow to the bowl flush faucet is stopped.
NOTE: *The bowl flush timing adjustment valve may be adjusted to shorten/lengthen the amount of time it takes to bleed off air pressure.*

Automatic Bowl Flush Function
When using the cuspidor with a Midmark dental chair, the operator may program a “Patient Cuspidor Position” on program button 4. This moves the chair to a desired position, and electrically activates the cuspidor bowl flush solenoid.

With the chair PC board in Cuspidor Position Return Mode, pressing program button 4 begins to move the chair to the programmed position and the PC board supplies voltage to the bowl flush solenoid (until chair

reaches the programmed position). This voltage causes the solenoid to open, allowing pilot air to flow to the bowl flush water valve as well as the bowl flush timing adjustment valve *[thru 1/8 in. red tubing]*. The pilot air opens the bowl flush water valve allowing water to flow to the bowl flush faucet. The bowl flush timing adjustment valve gradually bleeds off air pressure from the bowl flush water valve. When air pressure is removed from the bowl flush water valve, the valve closes and water flow to the bowl flush faucet is stopped.
NOTE: *The bowl flush timing adjustment valve may be adjusted to shorten/lengthen the amount of time it takes to bleed off air pressure.*

E. Basic Theory of Operation
Assistant's Instrument Unit (Figure 1-3)
[Refer to Section V for diagrams]

Syringe Air

With the air manual shut-off valve *[in junction box]* open and Master ON/OFF switch *[on delivery unit]* ON, the air regulator w/gauge supplies 80 PSI to the syringe *[thru 1/8 in yellow tubing]*.

Supply Water

The City / Bottle water selector valve supplies water to the syringe and water quick connect valve *[thru 1/8 in blue tubing].*

City / Bottle Water Selector Valve

Distilled water is supplied to the selector valve from the delivery system water bottle *[thru 1/8 in. blue tubing].* City water is supplied to the selector valve from the water regulator *[thru 1/8 in. blue tubing]*.

With the selector valve toggle switch in City ***or*** Bottle position, [city water ***or*** distilled water] flows thru the selector valve to the syringe *[thru 1/8 in. blue tubing]*.
NOTE: *The outgoing water line from the selector valve is used for both City and Bottle water.*

Vacuum

The central vacuum unit (not provided w/delivery system) provides suction for the HVE and saliva ejector. Vacuum tubing connects to the central vacuum unit in the junction box, runs thru the umbilical, and connects to the solids collector housing (1, Figure 1-3) *[inside of the assistant's unit]*. The HVE and saliva ejector hoses connect to the solids collector housing under the assistant's unit.
NOTE: *Any unused, ejector hose connection holes under the solids collector must be capped for proper operation.*

With the central vacuum unit turned on, and the lever of the desired ejector opened, there is suction present at the ejector. Any solids taken in by the ejector are caught in the solids collector basket (2, Figure 1-3).

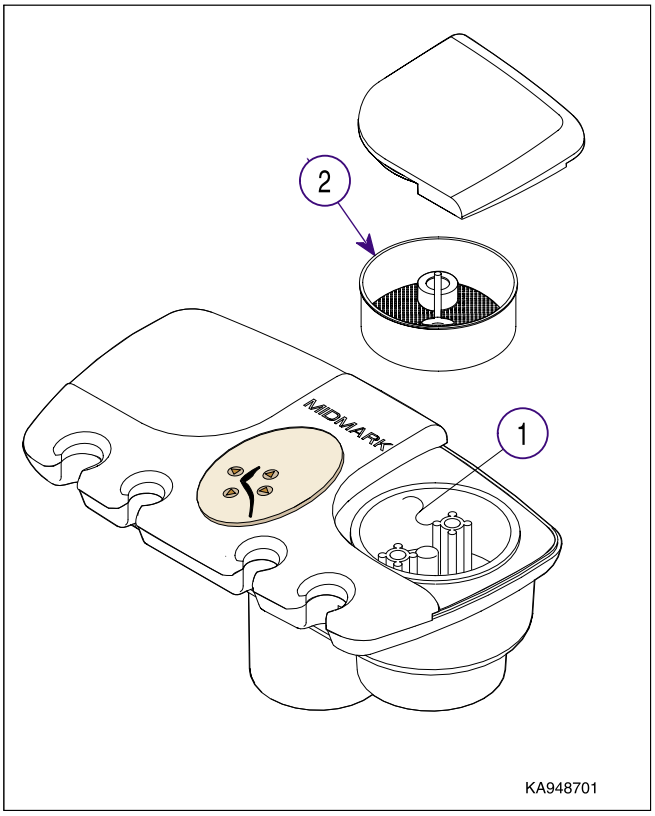

Figure 1-3. Assistant's Instrument Unit Solids Collector

SECTION I
GENERAL INFORMATION

F. Basic Theory of Operation
Delivery Unit Flex Arm (Figure 1-4)
[Refer to Section V for diagrams]

Locking Mechanism

Locking pawls (1, Figure 1-4) prevent down ward movement of the flex arm during normal operation. However, when either of the flex arm unlock buttons (2) are depressed, air flows thru the flex arm unlock button valve to the flex arm lock cylinder *[thru 1/8 in. brown tubing]* causing lock cylinder to extend. When the lock cylinder extends, the locking pawls raise allowing the flex arm to move downward.

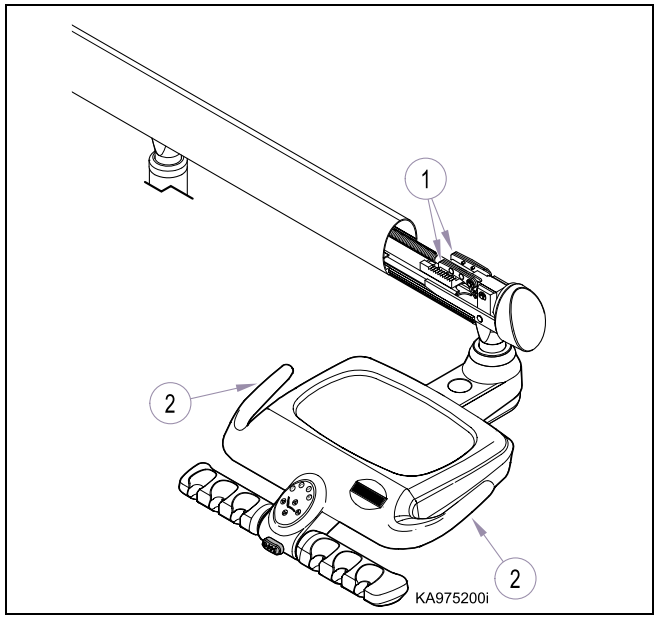

Figure 1-4. Flex Arm Locking Mechanism

1.4 Standard Torque Specifications

The following standard torque specifications in Table 1-1 apply to the hardware used on the unit unless otherwise noted in the service procedures or parts illustrations:

Table 1-1. Torque Specifications

Hardware Size	Torque Values
#6	11 to 21 inch-lbs. (1.2 to 2.3 N•M)
#8	20 to 30 inch-lbs. (2.2 to 3.3 N•M)
#10	32 to 42 inch-lbs. (3.6 to 4.8 N•M)
1/4 inch	75 to 85 inch-lbs. (8.5 to 9.6 N•M)
5/16 inch	18 to 22 ft.-lbs. (24.4 to 29.8 N•M)
3/8 inch	31 to 35 ft.-lbs. (42.0 to 47.5 N•M)
1/2 inch	50 to 60 ft.-lbs. (67.8 to 81.4 N•M)

1.5 Parts Replacement Ordering

If a replacement part is required, order the part directly from the factory as follows:

(1) Refer to Figure 1-5 to determine the location of the model number and serial number of the delivery system component. Record this data.

(2) Refer to the Parts List (Section VI) to determine the part number(s), description(s), and quantities of parts needed. Record this data.

(3) Determine the installation date of the delivery system. Record this data.

(4) Call Midmark with the recorded information and ask for the Technical Service Department. See back cover of this manual for the phone number or use the Fax Order Form (See page 7-2 for Fax Order Form).

1.6 Specifications

Table 1-2. Specifications

Description	Data
Electrical Requirements (for Universal Power Supply):	
115 VAC Units	115 VAC ±10%, 50/60 Hz 3 amp, single phase
230 VAC Models	230 VAC ±10%, 50/60 Hz 1.5 amp, single phase
Recommended Regulator Settings:	
Water	40 PSI
System Air	80 PSI
Water Bottle Air	40 PSI
Classifications:	Class 1, Type B Applied Part Ordinary Equipment, Continuous Operation
Certifications:	
Midmark Corporation	ISO-9001 Certified
115 VAC Units	UL-2601, CAN/CSA-C22.2 No. 601.1
230 VAC Units	Complies to the applicable revision of: MDD 93/42/EEC, Annex VII EN60601-1, EN60601-1-2, EN60601-1-4

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SECTION I
GENERAL INFORMATION

Figure 1-5 shows model / serial number location for delivery system components.

Figures 1-6 thru **1-10** show dimensional information.

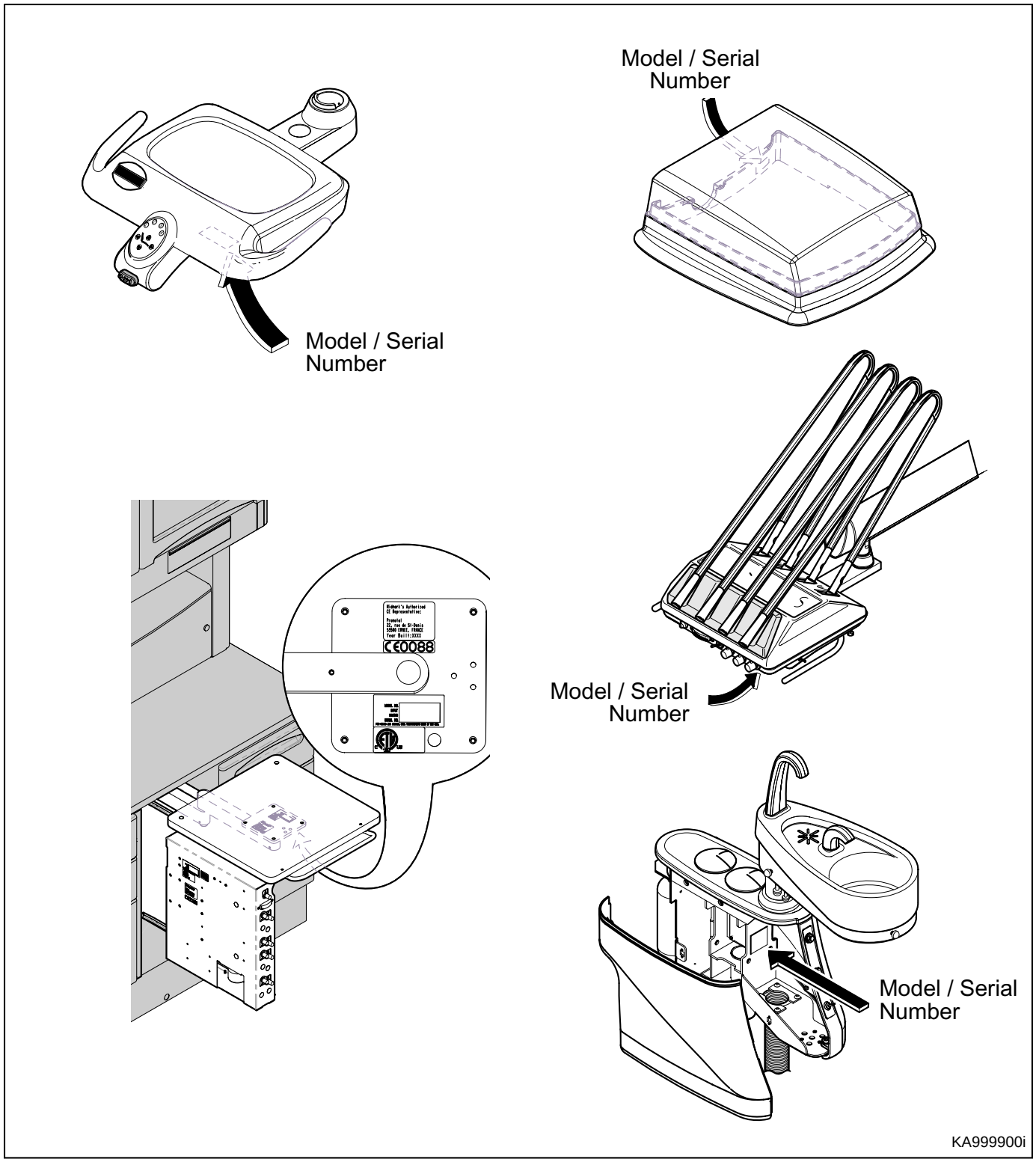
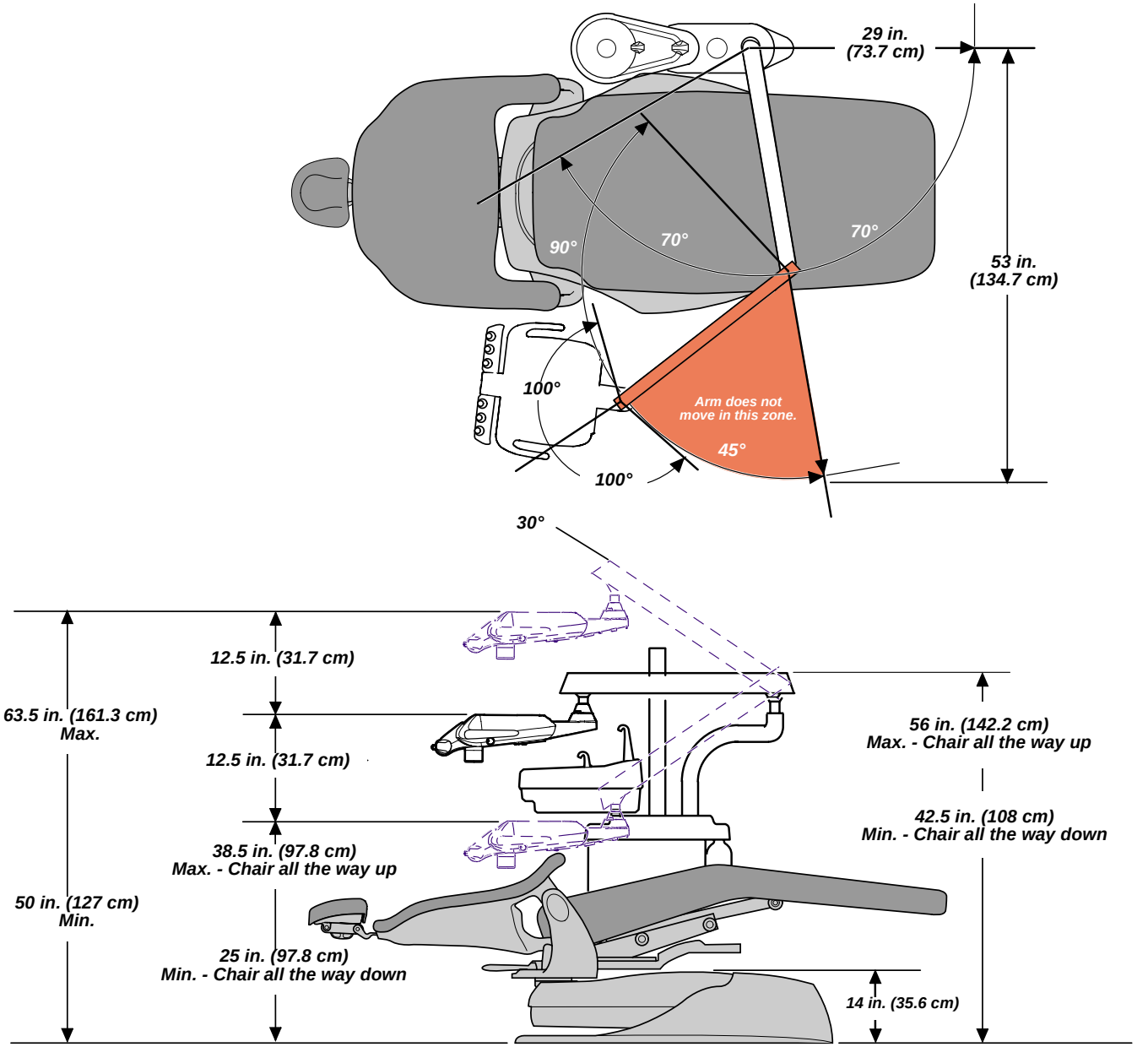


Figure 1-5. Model / Serial Number Location



KA945400

Figure 1-6. Console Mounted Delivery System
Range of Motion / DImensions

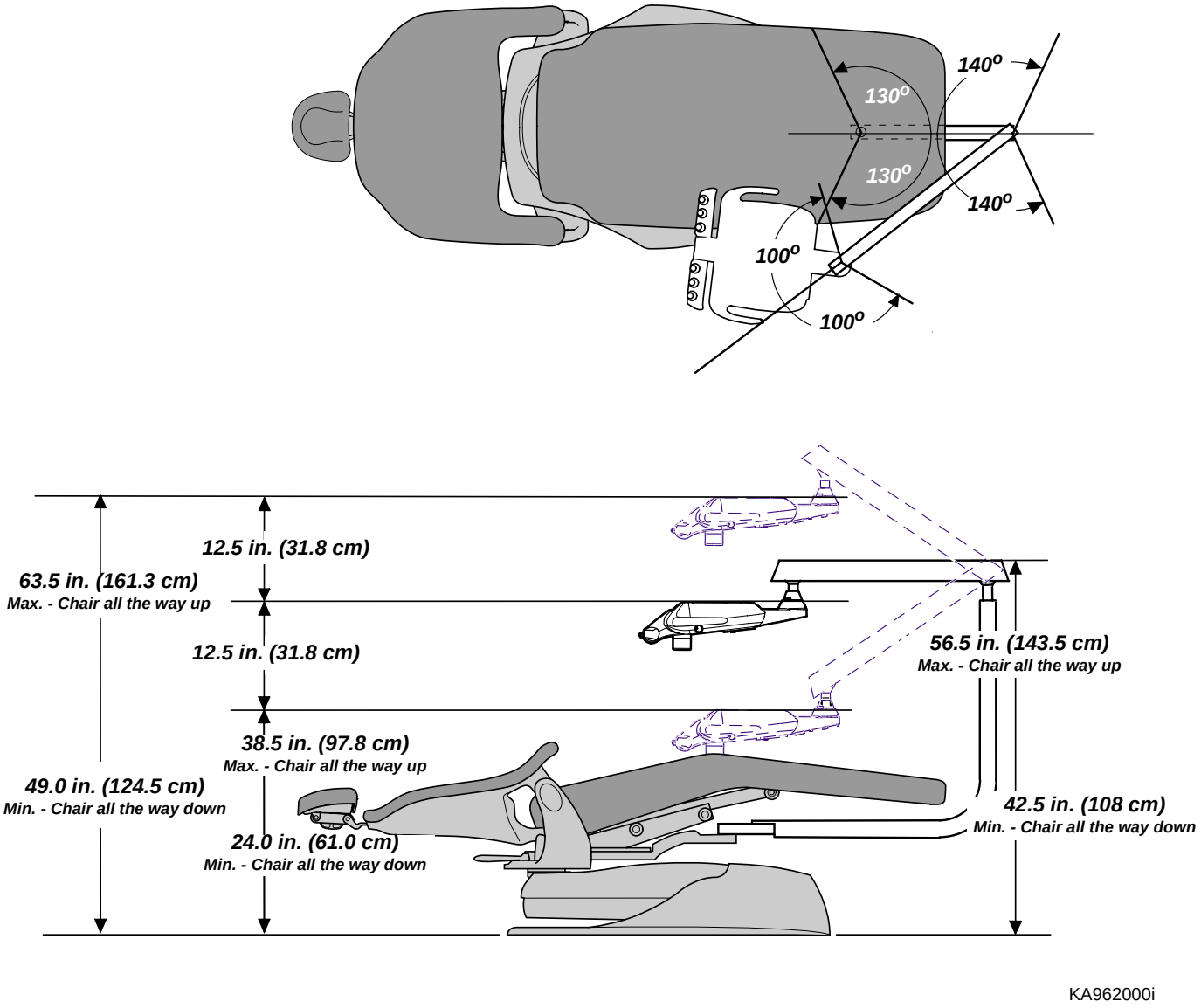


Figure 1-7. LR Mounted Delivery System Range of Motion / Dimensions

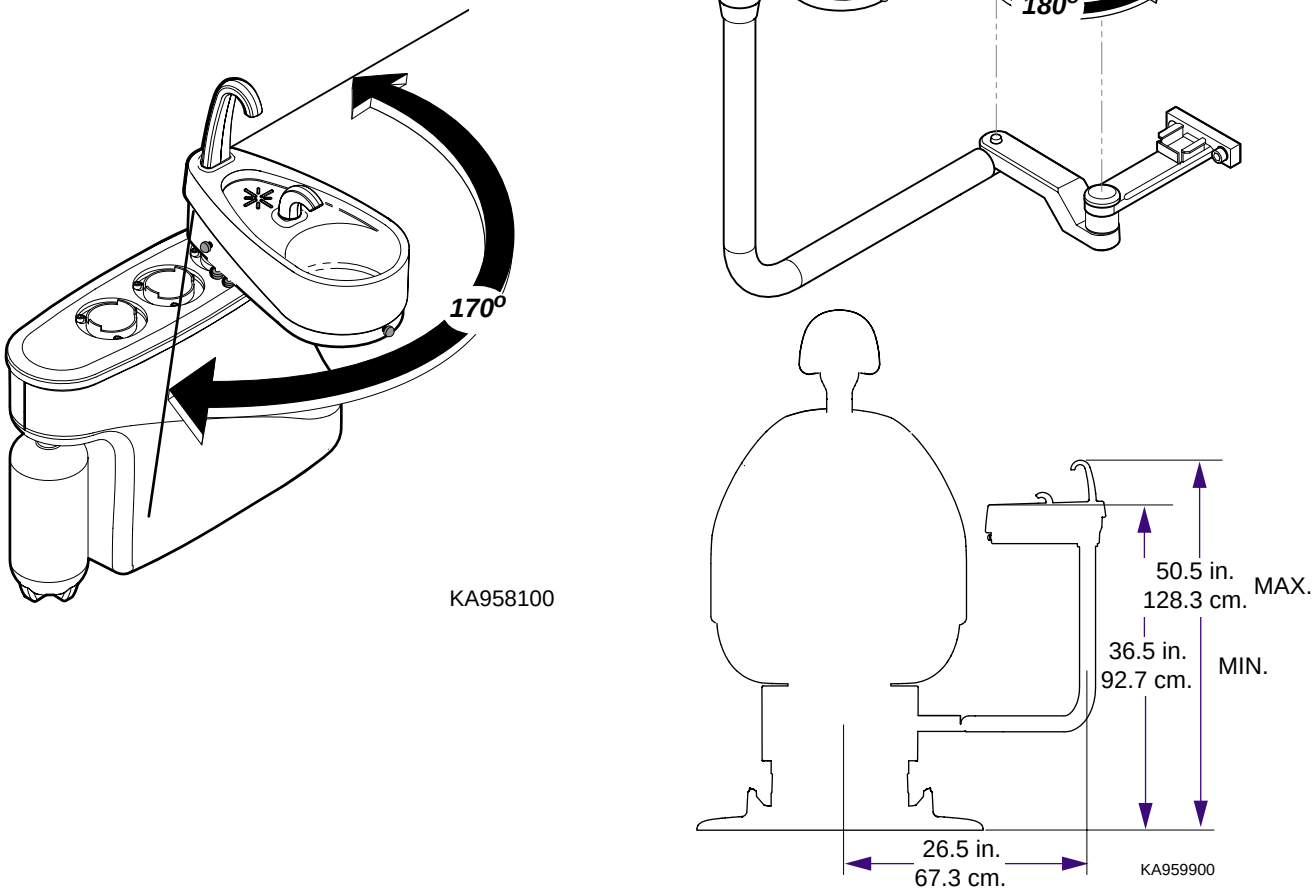


Figure 1-8. Cuspidor *(Console & LR versions shown)*
Dimensions / Range of Motion

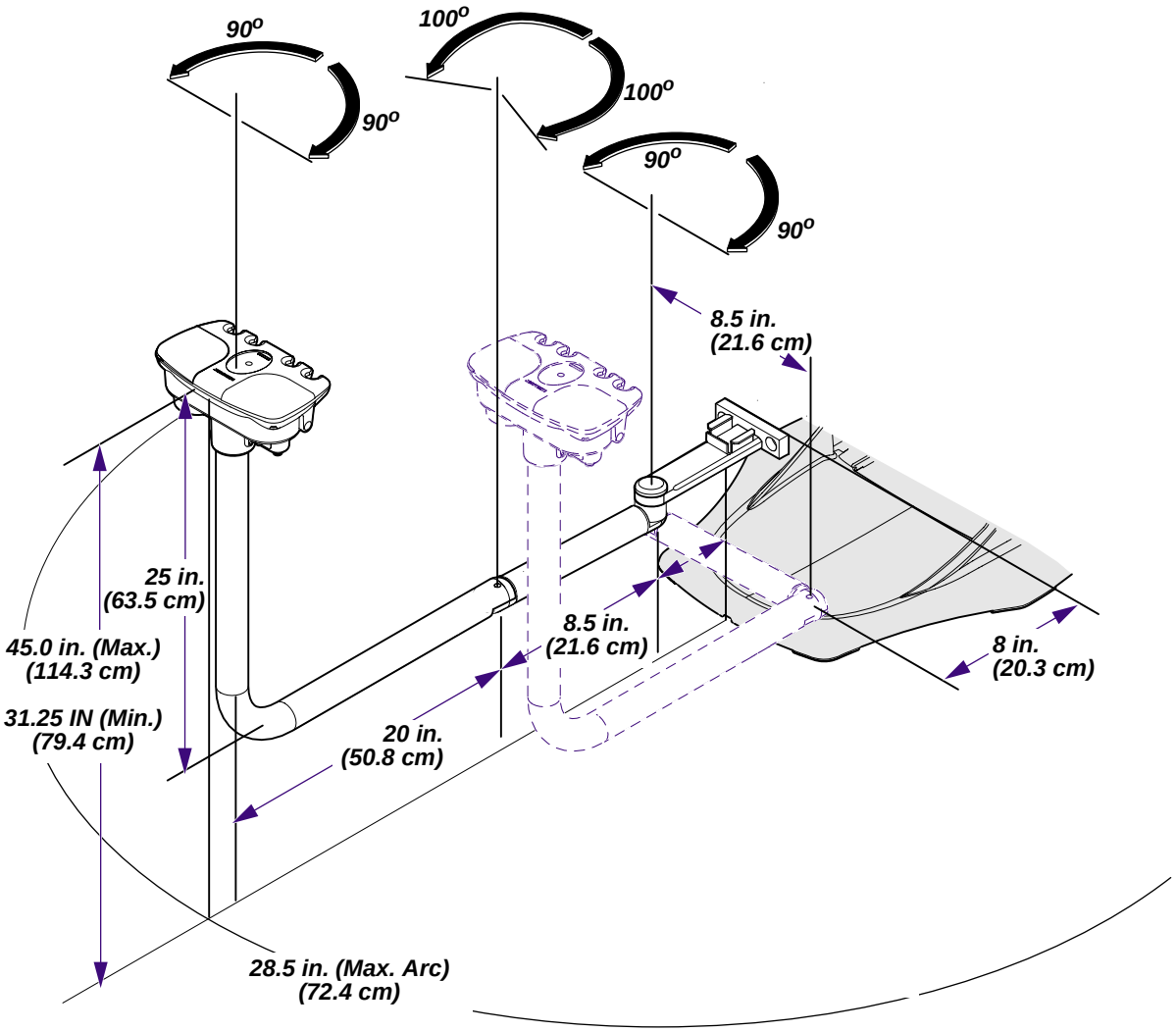


Figure 1-9. Assistant's Instrument Unit *(Rear Mounted shown)*
Range of Motion / Dimensions

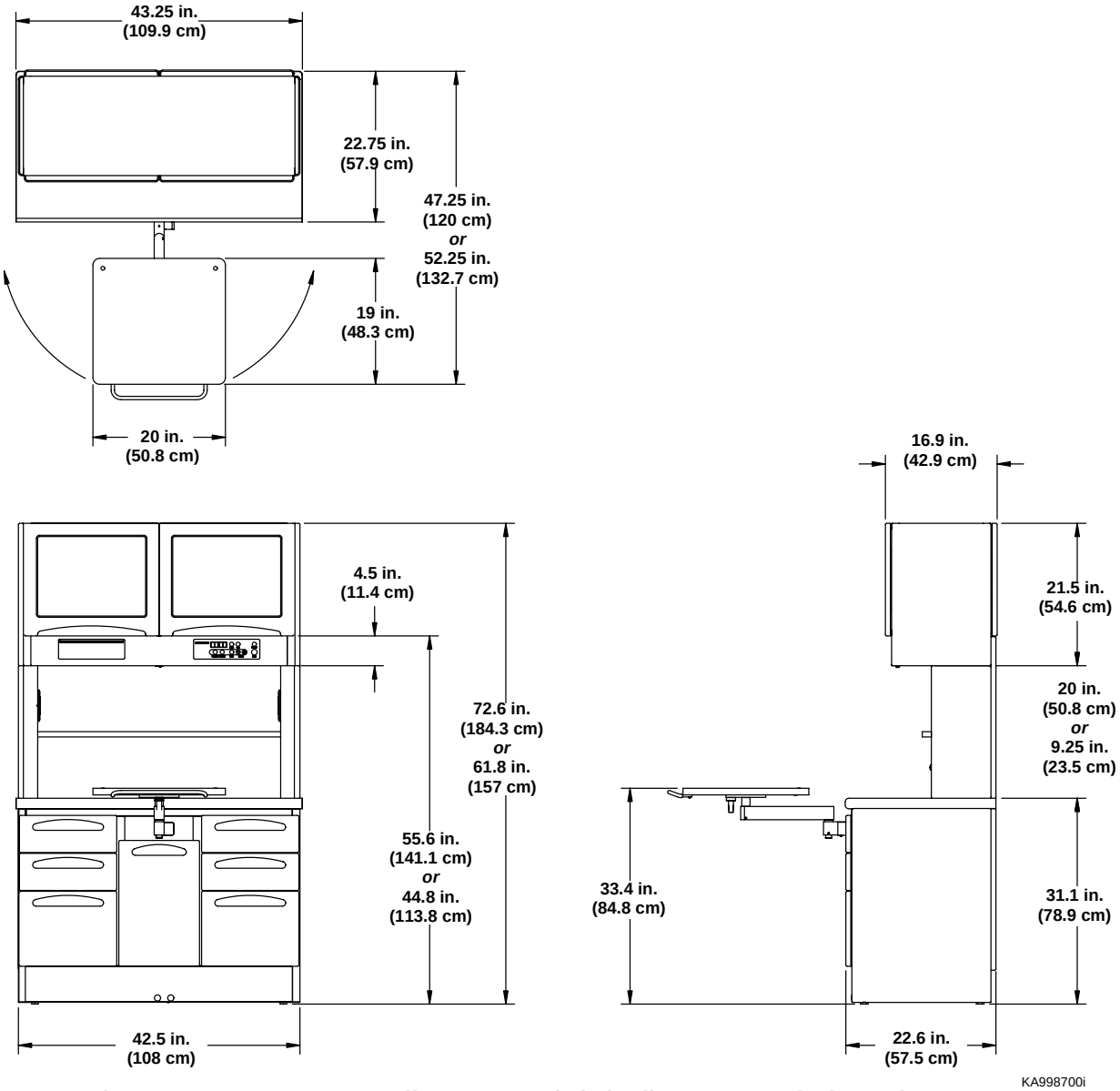


Figure 10. 12:00 Free-Standing Casework *(w/Delivery System)* Dimensions

SECTION I
GENERAL INFORMATION

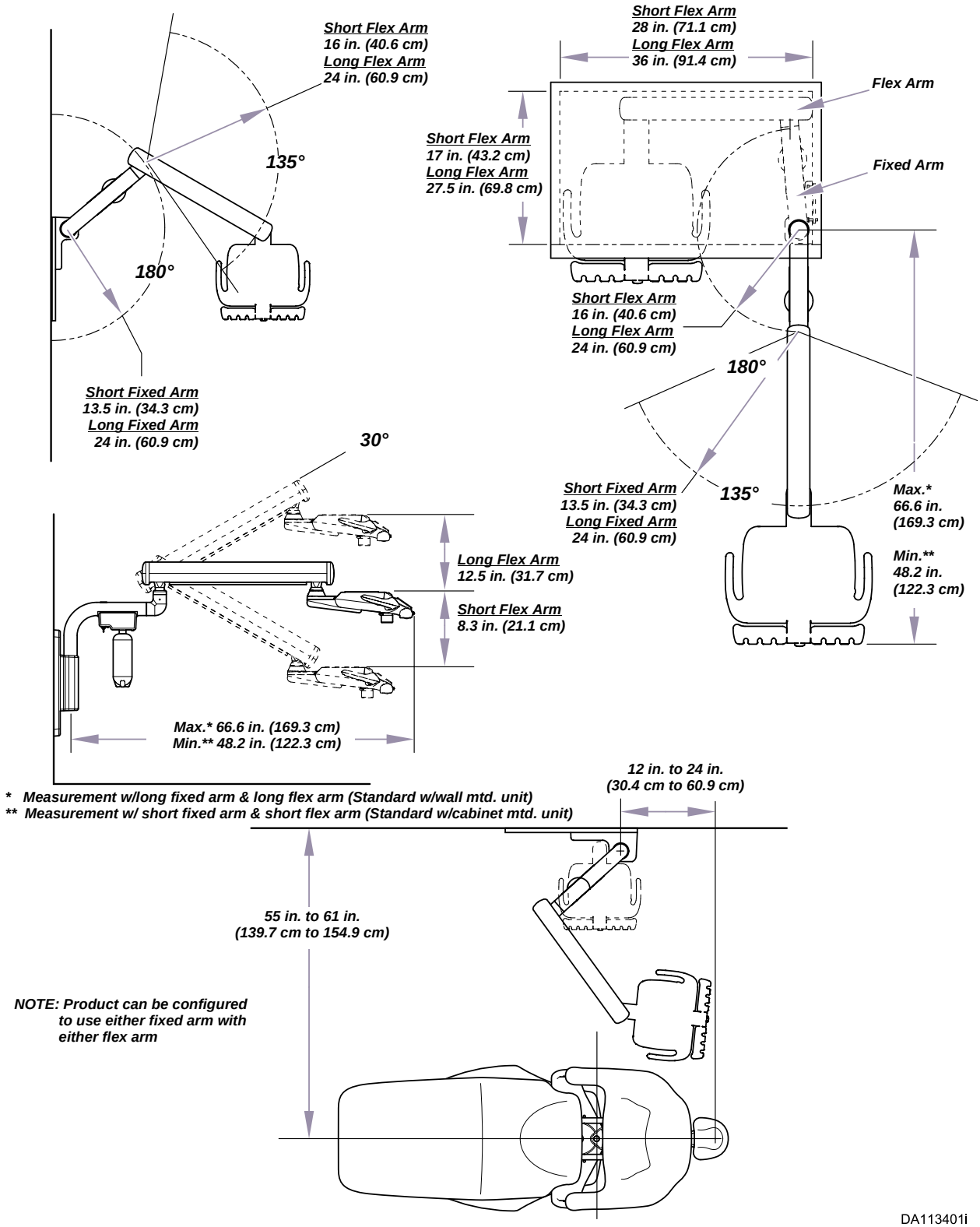


Figure 1-1. Side Delivery Unit Dimensions / Range of Motion / Recommended Mounting Location / Cabinet size Requirements

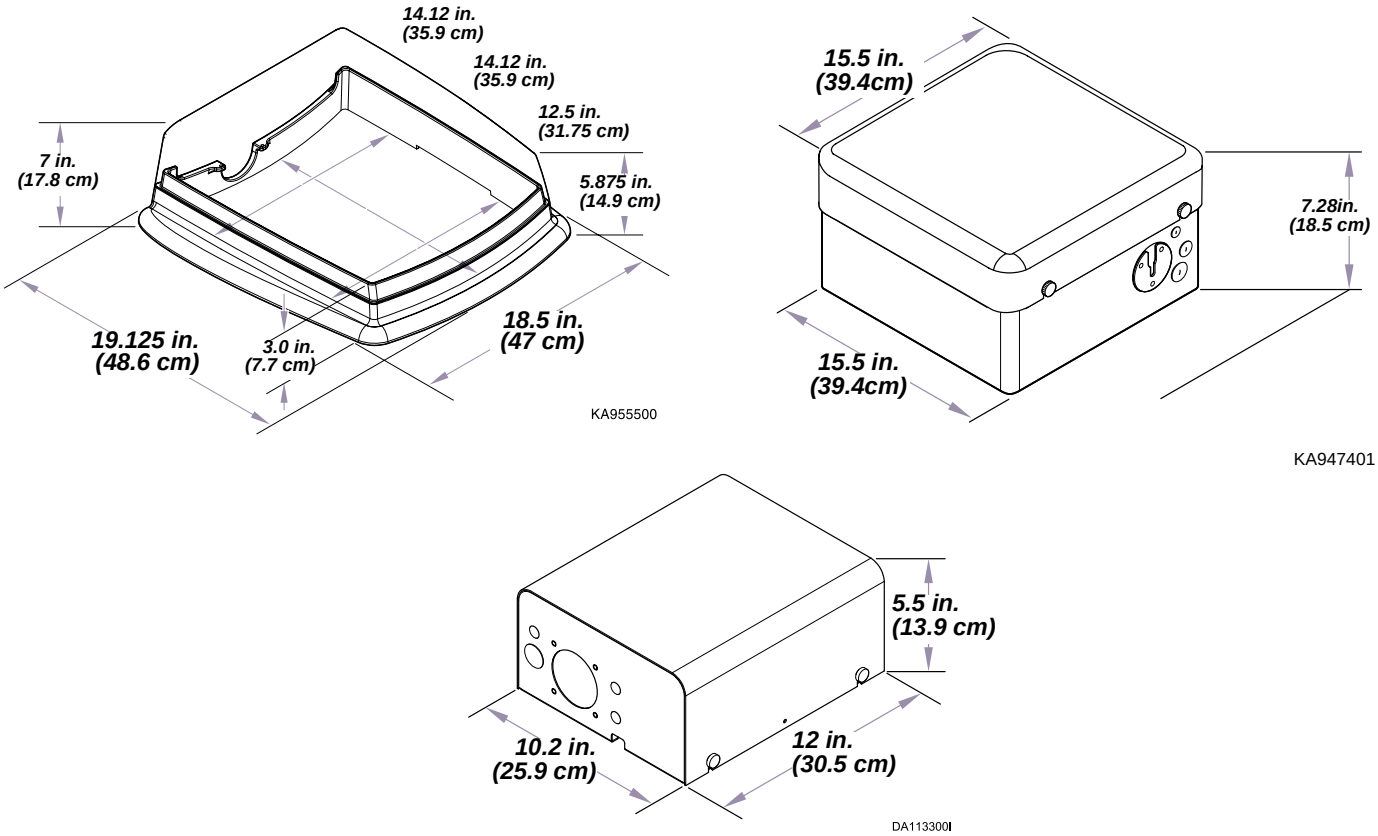


Figure 1-12. Junction Box Dimensions

1.7 Special Tools

Table 1-3 lists all of the special tools needed to repair the delivery system, how to obtain the special tools, and the purpose of each special tool.

Table 1-3. Special Tool List

Description of Special Tool	Manufacturer's Name / Address / Phone	Manufacturer's Part Number	Purpose of Special Tool
Multimeter	Commercially Available	Any Type	Used to perform continuity and voltage checks.
Torque Wrench	Commercially Available	Any Type	Used to tighten nuts or screws to specified values.

SECTION II
TESTING AND TROUBLESHOOTING

2.1 Operational Test

To effectively diagnose a delivery system malfunction, it may be necessary to perform the following operational test.

NOTE
The Operational Test describes what should happen during basic operation of delivery / whip system components. If a malfunction is discovered, refer to the appropriate troubleshooting guide to determine the cause of the problem and corrective procedures.

(1) Turn air and water manual shut-off valves *[in junction box]* ON.

(2) Turn delivery unit master switch ON.

Delivery Unit

(3) Depress air and water buttons of syringe(s).

Observe. When air button is depressed, syringe should release air pressure from tip. When water button is depressed, syringe should release water stream from tip.

(4) Move delivery unit foot control toggle switch to DRY position.

(5) Remove one handpiece from holder; then depress foot control pedal for several seconds, then release pedal.

Observe. When foot control pedal is depressed, the handpiece that is removed from its holder should run until the foot pedal is released. There should be no water coming from the handpiece.

(6) Repeat this step for each handpiece.

(7) Move delivery unit foot control toggle switch to WET position.

(8) Remove one handpiece from holder and depress foot control pedal for several seconds; then release pedal.

Observe. When foot control pedal is depressed, the handpiece that is removed from its holder should run and have a fine mist of water until the foot pedal is released.

(9) Repeat this step for each handpiece.

Cuspidor

(10) Place cup under fill spout and depress cup fill button.

Observe. Water should run until cup is filled to desired level.

(11) Depress bowl flush button.

Observe. Water should run for desired time to sufficiently rinse bowl.

Assistant's Instrument Unit

(12) Move lever of ejector to the OPEN position.

Observe. Suction should be present at the ejector.

(13) Repeat this step for each ejector.

(14) Depress air and water buttons of syringe(s).

Observe. When air button is depressed, syringe should release air pressure from tip. When water button is depressed, syringe should release water stream from tip.

Delivery / Whip Unit Flex Arm

(15) Move flex arm upward, and release; then attempt to move flex arm downward.

Observe. Flex arm should move upward freely and stay in position when released. It should not move downward.

(16) Depress flex arm unlock button(s) on delivery unit and move flex arm downward; then release unlock button(s).

Observe. Flex arm should move downward freely with unlock buttons depressed, and lock in place when unlock buttons are released.

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SECTION II
TESTING AND TROUBLESHOOTING

2.2 Delivery Unit Troubleshooting Guide

Table 2-1 is a troubleshooting guide to determine the cause of a malfunctioning delivery system. Also refer to diagrams in Section V.

Table 2-1. Troubleshooting Guide: Delivery Unit

Problem	Symptom	Probable Cause	Check	Correction
None of the hand-pieces or syringe(s) will function.	There is no water or air present at any of the handpieces or syringe(s).	Master ON/OFF switch is turned off or malfunctioning.	Check that master ON/OFF switch is turned on.	Replace master ON/OFF switch if necessary. Refer to para 4.11, 4.12, or 4.13.
		Air manual shut-off valve is turned off or malfunctioning.	Check that air manual shut-off valve is turned on.	Contact licensed plumber to replace air manual shut-off valve.
		Air master pilot shut-off valve is malfunctioning.	Disconnect 1/8 in. purple tubing from air master pilot shut-off valve and check for air pressure.	If there is no pressure, replace air master pilot shut-off valve. Refer to para 4.3.
Handpieces will not run.	Handpieces do not run or have water. Syringe works properly.	Throttle valve *[in foot control]* is malfunctioning - stuck closed.	Disconnect 1/4 in. clear tubing from 1/4 in. grey foot control tubing. Check for air pressure.	If there is no air pressure, replace throttle valve.
	Handpieces do not run or have water. Syringe has water, but no air.	Tubing from air regulator damaged or disconnected.	Check: 1/4 in. grey tubing w/rib *[from foot control]* and 1/8 in. yellow tubing *[from umbilical to delivery unit]* for damage and proper connections.	Replace damaged tubing. Reconnect any disconnected tubing.
		Air regulator is turned too low or malfunctioning.	Check that air regulator output pressure is 80 PSI.	Adjust air regulator output pressure to 80 PSI. Refer to para 4.1. If necessary, clean or replace air regulator. Refer to para 4.2.
	Handpieces have water but do not run. Syringe works properly.	Damaged or disconnected drive air tubing to delivery / whip head.	Check: 1/4 in. grey tubing w/o rib *[from foot control]* **AND** 1/4 in. clear tubing to handpiece supply drive air manifold for damage and proper connection.	Replace damaged tubing. Reconnect any disconnected tubing.
One handpiece does not run; all other handpieces work properly.	One handpiece does not run or have water; all other handpieces work properly.	Handpiece holder valve is malfunctioning - stuck open keeping kink valve “kinked”.	Replace suspect hand-piece holder valve with known working valve.	Replace handpiece holder valve. Refer to para 4.9.
		Kink valve is malfunctioning.	Check to see if kink valve “unkinks” when hand-piece is removed from handpiece holder.	Replace kink valve. Refer to para 4.5.
		Damaged or disconnected tubing in delivery head.	Check: 1/8 in. red tubing between pilot air manifold and handpiece on/off valve **AND** 1/8 in. purple tubing between hand-piece on/off valve and kink valve for damage and proper connection.	Replace damaged tubing. Reconnect any disconnected tubing.

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Table 2-1. Troubleshooting Guide: Delivery Unit

Problem	Symptom	Probable Cause	Check	Correction
One handpiece does not run; all other handpieces work properly. -Continued	One handpiece does not run, but has water and coolant air; all other handpieces work properly.	Drive air adjustment valve adjusted too low or malfunctioning.	Check drive air adjustment valve of malfunctioning handpiece.	Adjust drive air adjustment valve; replace if necessary. Refer to para 4.10.
		Damaged or disconnected tubing in delivery head.	Check 1/4 in. clear tubing between: drive air manifold [delivery unit] and drive air adjustment valve **AND** drive air adjustment valve and kink valve for damage and proper connection.	Replace damaged tubing. Reconnect any disconnected tubing.
No water to handpieces or syringe. Handpieces run properly.	With water selector valve *[City / Bottle toggle switch]* in **either** position, there is no water to handpieces or syringe.	Damaged or disconnected tubing.	Check: 1/8 in. blue tubing between water selector valve and water supply manifold *[in delivery unit]* or double pinch valve *[in whip]* for damage and proper connection.	Replace damaged tubing. Reconnect any disconnected tubing.
		Water selector valve malfunctioning.	Disconnect "out-going" water line *[refer to Section V]* from water selector valve and check for water pressure.	If there is no water pressure, clean or replace water selector valve. Refer to para 4.19, 4-20 ***or*** 4.21.
		Water supply manifold *[in delivery head]* malfunctioning.	Disconnect instrument water supply tubing *[1/8 in. blue]* from water supply manifold *[in delivery unit]*. Check for water pressure.	If there is water pressure, clean or replace water supply manifold. Refer to para 4.16.
	With water selector valve *[City / Bottle toggle switch]* in **City** position there is no water to handpieces or syringe; **Bottle** position functions properly.	Water selector valve malfunctioning.	Disconnect incoming city water line *[refer to Section V]* from water selector valve and check for water pressure.	If there is water pressure, clean or replace water selector valve. Refer to para 4.19, 4-20 ***or*** 4.21.
		Water manual shut-off valve *[in junction box]* is turned off or malfunctioning.	Check that water manual shut-off valve is turned on.	Contact licensed plumber to replace shut-off valve if necessary.
		Water regulator *[in junction box]* is turned too low or malfunctioning.	Check that water regulator output pressure is 40 PSI.	Adjust water regulator output pressure to 40 PSI. Refer to para 4.1. Clean or replace water regulator if necessary. Refer to para 4.2.
		Water master pilot shut-off valve *[in junction box]* is malfunctioning.	Disconnect 1/8 in. blue tubing from water master pilot shut-off valve and check for water pressure.	If there is no water pressure, replace water master pilot shut-off valve. Refer to para 4.3.
		Damaged or disconnected tubing.	Check: 1/8 in. blue tubing between water regulator *[in junction box]* and water selector valve for damage and proper connection.	Replace damaged tubing. Reconnect any disconnected tubing.

Table 2-1. Troubleshooting Guide: Delivery Unit

Problem	Symptom	Probable Cause	Check	Correction
No water to handpieces or syringe. Handpieces run properly. -Continued	With water selector valve *[City / Bottle toggle switch]* in **Bottle** position there is no water to handpieces or syringe; **City** position functions properly.	Water bottle is empty.	Check that water bottle is full.	Fill water bottle with distilled water.
		Water bottle gasket damaged or missing.	Check for air leaking from top of water bottle.	Replace water bottle gasket. Refer to para 4.7.
		Water bottle air regulator *[in junction box]* set too low or malfunctioning.	Check that water bottle air regulator output pressure is set at 40 PSI.	Adjust water bottle air regulator output pressure to 40 PSI. Clean or replace regulator if necessary. Refer to para 4.1 ***or*** 4.2.
		Damaged or disconnected tubing.	Check: 1/8 in. brown tubing between water bottle air regulator *[in junction box]* and water bottle cap for damage and proper connection.	Replace damaged tubing. Reconnect any disconnected tubing.
			Check: 1/8 in. blue tubing between water bottle cap and water selector valve for damage and proper connection.	Replace damaged tubing. Reconnect any disconnected tubing.
		Water selector valve malfunctioning.	Disconnect 1/8 in. blue tubing *[from water bottle]* from water selector valve and check for water pressure.	If there is water pressure, clean or replace water selector valve. Refer to para 4.19, 4-20 ***or*** 4.21.
No water to handpiece(s). Syringe works properly.	All handpieces run and syringe works properly, but there is no water to any of the handpieces.	Toggle switch on foot control is turned off.	Check that toggle switch is turned on.	Turn toggle switch on.
		Toggle switch on foot control is malfunctioning.	Check for water pressure at output of coolant water toggle valve *[refer to Section V]*.	Replace entire foot control (toggle switch valves are not available). Refer to para 4.6.
		Damaged or disconnected tubing.	Check 1/8 in. orange tubing *[from umbilical]* for damage and proper connection.	Replace damaged tubing. Reconnect any disconnected tubing.
	Handpiece runs, but there is no water to that handpiece. Other handpieces work properly.	Coolant water adjustment valve is adjusted too low or is malfunctioning.	Check coolant water adjustment valve of malfunctioning handpiece.	Adjust coolant water adjustment valve; replace if necessary. Refer to para 4.14 ***or*** 4.15.
		Coolant Water Control Valve malfunctioning [Whip Unit].	Disconnect 1/8" blue outlet line and check for water during operation.	If necessary replace Coolant Water Control Valve. Refer to tubing schematic.

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Table 2-1. Troubleshooting Guide: Delivery Unit

Problem	Symptom	Probable Cause	Check	Correction
No water to handpiece(s). Syringe works properly. ***-Continued***	Handpiece runs, but there is no water to that handpiece. Other handpieces work properly. *- Continued*	Damaged or disconnected tubing in delivery unit.	Check 1/8 in. blue tubing between water supply manifold and coolant water adjustment valve **AND** between coolant water adjustment valve and kink valve of malfunctioning handpiece for damage and proper connection.	Replace damaged tubing. Reconnect any disconnected tubing.
			Check 1/8 in. white tubing between coolant water adjustment valve and kink valve **AND** between kink valve and check valve.	Replace damaged tubing. Reconnect any disconnected tubing.
		Kink valve malfunctioning.	Replace suspect kink valve with known working kink valve.	Replace kink valve. Refer to para 4.5.
Water leaks from handpiece when removed from holder.	When any handpiece is removed from holder, water comes out without foot control pedal being depressed.	Coolant water toggle valve is malfunctioning -bleed port is clogged allowing pressure to remain in air line.	Pull off orange signal line and check for residual air pressure (residual air pressure indicates bleed port is not working).	Replace entire foot control (foot control toggle valve is not available). Refer to para 4.6.
		Coolant water flush valve is malfunctioning - stuck open.	Replace suspect coolant water flush valve with known working flush valve.	Replace coolant water flush valve. Refer to para 4.14 *or* 4.15.
All handpieces run, but do not function properly.	Water sputters when handpiece is used.	Air in lines.	Check for air in coolant water lines.	Depress coolant water flush valve button and hold for approximately 45 seconds.
	Water is leaking into oil jar.	Handpiece is not sealing at hose connection point, causing water to leak into exhaust hole.	Check for damaged or missing gasket in handpiece.	Replace damaged or missing gaskets.
	With water selector valve *[City / Bottle toggle switch]* in **either** position, water pressure at all handpieces and syringe is too low.	Twisted or damaged tubing.	Check: 1/8 in. blue tubing between water selector valve and water supply manifold *[in delivery unit]* for damage, kinks, etc.	Replace damaged tubing. Reroute tubing to prevent kinking if necessary.
		Water supply manifold *[in delivery unit]* is partially clogged.	Disconnect all tubing from manifold and inspect for proper air flow.	Clean or replace water supply manifold. Refer to para 4.16.
	With water selector valve *[City / Bottle toggle switch]* in **City** position, water pressure at all handpieces and syringe is too low. In **Bottle** position, water pressure is normal.	Water regulator setting is too low.	Check that water regulator *[in junction box]* output is 40 PSI.	Adjust water regulator output pressure to 40 PSI. Refer to para 4.1. If necessary, clean or replace regulator. Refer to para 4.2.

Table 2-1. Troubleshooting Guide: Delivery Unit

Problem	Symptom	Probable Cause	Check	Correction
All handpieces run, but do not function properly. -Continued	With water selector valve *[City / Bottle toggle switch]* in **City** position, water pressure at all handpieces and syringe is too low. In **Bottle** position, water pressure is normal. *- Continued*	Twisted or damaged tubing.	Check: 1/8 in. blue tubing between water selector valve and water regulator *[in junction box]* for damage, kinks, etc.	Replace damaged tubing. Reroute tubing to prevent kinking if necessary.
	With water selector valve *[City / Bottle toggle switch]* in **Bottle** position, water pressure at all handpieces and syringe is too low. In **CIty** position, water pressure is normal.	Water bottle air regulator setting is too low.	Check that water bottle air regulator *[in junction box]* output is 40 PSI.	Adjust water bottle air regulator output pressure to 40 PSI. Refer to para 4.1. If necessary, clean or replace regulator. Refer to para 4.2.
		Twisted or damaged tubing.	Check: 1/8 in. brown tubing between water bottle air regulator *[in junction box]* and water selector valve for damage, kinks, etc.	Replace damaged tubing. Reroute tubing to prevent kinking if necessary.
			Check: 1/8 in. blue tubing between water bottle cap and water selector valve for damage, kinks, etc.	Replace damaged tubing. Reroute tubing to prevent kinking if necessary.
		Water bottle gasket leaking.	Check for air leaking from top of water bottle.	Replace water bottle gasket. Refer to para 4.7.
	While one handpiece is in use, one or more additional handpiece(s) run while in holders.	Handpiece is not stowed properly in its holder.	Check to see if kink valve of unused handpiece is “unkinked”, even though handpiece is in holder.	Make sure handpieces are fully stowed in handpiece holders.
		Handpiece on/off valve is out of adjustment.	Check to see if handpiece on/off valve is activated when handpiece is inserted in handpiece holder.	Adjust handpiece on/off valve lever so it properly activates when handpiece is inserted in handpiece holder. Refer to para 4.9.
		Handpiece holder valve is malfunctioning - stuck closed.	Check to see if kink valve assembly of unused handpiece is “unkinked”, even though handpiece is in handpiece holder.	Replace handpiece holder valve. Refer to para 4.9.
		Check valve of malfunctioning handpiece is defective - stuck open.	Inspect handpiece check valve *[connected to 1/8 in. clear tubing for handpiece]*, to see if it is stuck open or replace suspect check valve with known working check valve.	Replace handpiece check valve.
		Tube connector malfunctioning.	Check for leaks at connection point between handpiece and tube connector.	Replace tube connector.

Table 2-1. Troubleshooting Guide: Delivery Unit

Problem	Symptom	Probable Cause	Check	Correction
All handpieces run, but do not function properly. -Continued	While one handpiece is in use, one or more additional handpiece(s) run while in handpiece holders. *- Continued*	Kink valve is malfunctioning.	Check to see if kink valve is working properly.	Adjust kink valve. Replace kink valve if necessary. Refer to para 4.5.
	Handpiece runs momentarily after it is removed from the handpiece holder even though foot control pedal is not depressed.	Drive air foot pedal valve is malfunctioning - bleed port is clogged allowing pressure to remain in drive air line.	Disconnect 1/4 in. clear tubing from 1/4 in. grey foot control tubing *[in J-box]* and check for residual air pressure (residual air pressure indicates bleed port is not working).	Replace entire foot control (drive air foot pedal valve is not available). Refer to para 4.6.
	Master ON/OFF switch is turned off, but kink valves don't unkink.	Drive air foot pedal valve is malfunctioning - bleed port is clogged allowing pressure to remain in drive air line.	Disconnect 1/4 in. clear tubing from 1/4 in. grey foot control tubing *[in J-box]* and check for residual air pressure (residual air pressure indicates bleed port is not working).	Replace entire foot control (drive air foot pedal valve is not available). Refer to para 4.6.
		Master on/off switch valve malfunctioning - stuck open.	Replace suspect master on/off switch valve with known working switch valve.	Replace master on/off valve. Refer to para 4.11, 4.12, ***or*** 4.13.
	Coolant air ***only*** is not working.	Coolant air adjustment valve *[on delivery unit]* adjusted too low or malfunctioning.	Check coolant air adjustment valve.	Adjust coolant air adjustment valve; replace if necessary. Refer to para 4.10.
		Damaged or disconnected tubing.	Check: 1/8 in. green tubing between coolant air adjustment valve *[in delivery unit]* or pinch valve *[in whip unit]* and junction box, **ALSO** between coolant air adjustment valve or pinch valve and all handpieces for damage and proper connection.	Replace damaged tubing. Reconnect any disconnected tubing.
Handpieces work properly; Syringe has no air.	Syringe has no air.	Syringe air adjustment valve *[on delivery unit]* or pinch valve *[on whip unit]* adjusted too low or malfunctioning.	Check setting of syringe air adjustment valve or pinch valve.	Adjust syringe air adjustment valve or pinch valve; replace valve if neces-sary. Refer to para 4.10.
		Damaged or disconnected tubing.	Check 1/8 in. yellow tubing between syringe air adjustment valve *[in delivery unit]* and junction box, **ALSO** between syringe air adjustment valve and syringe for damage and proper connection.	Replace damaged tubing. Reconnect any disconnected tubing.

2.3 Cuspidor Troubleshooting Guide

Table 2-2 is a troubleshooting guide to determine the cause of a malfunctioning cuspidor. Also refer to diagrams in Section V.

Table 2-2. Troubleshooting Guide: Cuspidor

Problem	Symptom	Probable Cause	Check	Correction
No water at cup filler and bowl rinse.	Neither cup filler or bowl rinse have water. Handpieces & syringe work properly.	Damaged or disconnected tubing.	Check 1/4 in. blue tubing between junction box and cuspidor for damage and proper connections.	Replace damaged tubing. Reconnect any loose connections.
			Check 1/8 in. yellow tubing between cuspidor and console (connection box under chair seat on LR operator) for damage and proper connections.	Replace damaged tubing. Reconnect any loose connections.
No water at cup filler.	When either cup filler button is pressed, no water comes out; bowl rinse works properly.	Cup filler flow adjustment valve adjusted too low.	Check cup filler adjustment valve.	Adjust cup filler flow adjustment knob.
		Cup fill push button valves malfunctioning.	Replace suspect cup fill push button valves with known working push button valves.	Replace cup fill push button valves. Refer to para 4.25.
		Cup fill (pilot / primary) air valve malfunctioning.	Replace suspect valve with known working valve.	Replace cup fill (pilot / primary) air valve. Refer to para 4.30.
		Cup fill water valve malfunctioning.	Replace cup fill water valve with known working valve.	Try to flush any debris out of valve. Replace cup fill water valve if necessary. Refer to para 4.26.
		Damaged or disconnected tubing.	Check: 1/8 in. white tubing between two cup filler push button valves and shuttle valve **AND** between shuttle valve and cup filler air timing valve for damage.	Replace damaged tubing. Reconnect any loose connections.
			Check: 1/4 in. yellow tubing between two cup filler air timing valves for damage.	Replace damaged tubing. Reconnect any loose connections.
			Check: 1/8 in. red tubing between two cup filler air timing valves and cup fill water valve for damage.	Replace damaged tubing. Reconnect any loose connections.
			Check: 1/4 in. blue tubing between cup filler adjustment valve and cup fill water valve for damage and proper connections.	Replace damaged tubing. Reconnect any loose connections.

Table 2-2. Troubleshooting Guide: Cuspidor

Problem	Symptom	Probable Cause	Check	Correction
No water at bowl flush.	When bowl flush push button is pressed, no water comes out; cup filler works correctly.	Bowl flush push button valve is malfunctioning.	Replace suspect bowl flush push button valve with known working push button valve.	Replace bowl flush push button valve. Refer to para 4.25.
		Bowl flush control pinch valve adjusted too tightly.	Check adjustment of valve.	Adjust pinch valve.
		Bowl flush water valve is malfunctioning.	Replace suspect bowl flush water valve with known working valve.	Try to flush any debris out of valve. Replace bowl flush water valve if necessary. Refer to para 4.27.
		Damaged or disconnected tubing.	Check all 1/8 in. red tubing between bowl flush push button valve, bowl flush solenoid, bowl flush air timing valve, and bowl flush water valve for damage and proper connections.	Replace damaged tubing. Reconnect any disconnected tubing.
			Check: 1/4 in. blue tubing between bowl flush pinch valve and bowl flush water valve for damage and proper connections.	Replace damaged tubing. Reconnect any disconnected tubing.
Water to bowl flush runs continuously.	Water to bowl flush runs continuously; cup filler works correctly.	Bowl flush push button valve is malfunctioning.	Replace suspect bowl flush push button valve with known working valve.	Replace bowl flush push button valve. Refer to para 4.25.
		Bowl flush water valve is malfunctioning.	Replace suspect bowl flush water valve with known working valve.	Try to flush any debris out of valve. Replace bowl flush water valve if necessary. Refer to para 4.27.
		Bowl flush solenoid is malfunctioning.	Check for voltage across solenoid.	If no voltage is present, replace bowl flush solenoid. Refer to para 4.28. If voltage is present, replace chair PC board. Refer to Midmark Dental Chair Service & Parts Manual.
Water to cup filler runs continuously.	Water to cup filler runs continuously; bowl rinse works correctly.	One of the cup filler push button valves stuck open.	Check cup filler push button valves or replace suspect cup filler push button valve with known working valve.	Replace cup filler push button valve. Refer to para 4.25.
Bowl flush works when button is pressed, but does not run for desired length of time.	Bowl flush stops immediately after button is released ***or*** does not run for desired length of time (runs too long / not long enough).	Bowl flush timing adjustment valve is out of adjustment or malfunctioning.	Adjust bowl flush timing adjustment valve.	Replace bowl flush timing adjustment valve if necessary. Refer to para 4.29.
Cup fill works when button is pressed, but does not run for desired length of time.	Cup fill stops immediately after button is released or does not run for desired length of time (runs too long / not long enough).	Cup fill timing adjustment valve is out of adjustment or malfunctioning.	Adjust cup fill timing adjustment valve.	Replace cup fill timing adjustment valve if necessary. Refer to para 4.29.

Table 2-2. Troubleshooting Guide: Cuspidor

Problem	Symptom	Probable Cause	Check	Correction
Cuspidor will not drain.	Cuspidor bowl overflows.	Damaged drain line.	Check drain line for damage.	Replace drain line.
		Clogged drain line or facility drain.	Check drain line and facility drain for clogs.	Clear drain of any possible obstructions.

2.4 Assistant's Instrument Unit Troubleshooting Guide

Table 2-3 is a troubleshooting guide to determine the cause of a malfunctioning assistant's instrument unit. Also refer to diagrams in Section V.

Table 2-3. Troubleshooting Guide: Assistant's Instrument Unit

Problem	Symptom	Probable Cause	Check	Correction
No water to syringe or water quick connect.	With water selector valve *[City / Bottle toggle switch]* in **either** position, no water is present at syringe or water quick connect.	Water selector valve is malfunctioning.	Remove outgoing water line from water selector valve *[refer to Section V]* and check if water is present.	If no water is present, replace water selector valve. Refer to para 4.19, 4.20 ***or*** 4.21.
		Damaged or disconnected tubing.	Check: 1/8 in blue tubing between water selector valve and syringe, **AND** 1/4 in. blue tubing to water quick connect for damage and proper connection.	Replace damaged tubing. Reconnect any disconnected tubing.
	With water selector valve *[City / Bottle toggle switch]* in **Bottle** position, no water is present at syringe or water quick connect. In **City** position, water is present.	Water bottle is empty.	Check that there is water in bottle.	Fill water bottle with distilled water.
		Water bottle gasket is leaking.	Check for air leaking around bottle cap.	Replace water bottle gasket. Refer to para 4.7.
		Water bottle air regulator is out of adjustment or malfunctioning.	Check that air regulator output pressure is 40 PSI.	Adjust air regulator output pressure until it is 40 PSI. Refer to para 4.1. If necessary, clean or replace air regulator. Refer to para 4.2.
		Damaged or disconnected tubing.	Check: 1/8 in. brown tubing between water bottle air regulator *[in junction box]* and water bottle for damage and proper connections.	Replace damaged tubing. Reconnect any disconnected tubing.
			Check: 1/8 in. blue tubing between water bottle and water selector valve for damage and proper connection.	Replace damaged tubing. Reconnect any disconnected tubing.

Table 2-3. Troubleshooting Guide: Assistant's Instrument Unit

Problem	Symptom	Probable Cause	Check	Correction
No water to syringe or water quick connect. ***-Continued***	With water selector valve *[City / Bottle toggle switch]* in **Bottle** position, no water is present at syringe or water quick connect. In **City** position, water is present. - *Continued*	Water selector valve is malfunctioning.	Replace suspect water toggle valve with known working valve.	Replace water selector valve. Refer to para 4.19, 4.20 ***or*** 4.21.
	With water selector valve *[City / Bottle toggle switch]* in **City** position, no water is present at syringe or water quick connect. In **Bottle** position, water is present.	Water manual shut-off valve *[in junction box]* is turned off or malfunctioning.	Check that water manual shut-off is ON.	Contact licensed plumber to replace water manual shut-off valve.
		Damaged or disconnected tubing.	Check: 1/8 in. blue tubing between air regulator *[in junction box]* and water selector valve for damage and proper connections.	Replace damaged tubing. Reconnect any disconnected tubing.
		Water selector valve is malfunctioning.	Replace suspect water selector valve with known working valve.	Replace water selector valve. Refer to para 4.19, 4.20 ***or*** 4.21.
No water to syringe. Water quick connect works properly.	No water present at syringe. Water quick connect works properly.	Pinch valve *[in assistant's unit]* adjusted too tightly.	Check adjustment of pinch valve.	Loosen pinch valve.
		Syringe button valve is malfunctioning.	Replace suspect button valve with known working valve.	Replace syringe button valve.Refer to para 4.32.
No water to quick connect. Syringe works properly.	No water to quick connect port. Syringe works properly.	Water quick connect valve is malfunctioning.	Replace water quick connect valve with known working valve.	Replace water quick connect valve. Refer to para 4.34.
No suction at saliva ejector or HVE.	With ON/OFF lever(s) open, there is insufficient suction at saliva ejector and HVE.	Central vacuum unit is turned off or malfunctioning.	Check that central vacuum unit is turned on.	Contact service provider for central vacuum unit if necessary.
		Damaged or disconnected tubing.	Check 5/8 in. grey vacuum tubing between assistant's unit and central vacuum unit connection *[in junction box]* for damage and proper connections.	Replace damaged tubing. Reconnect any disconnected tubing.
		Hole plug(s) missing from solids collector.	Check for unplugged hole(s) under solids collector.	Replace hole plug(s) on solids collector.

2.5 Flex Arm Troubleshooting Guide

Table 2-4 is a troubleshooting guide to determine the cause of a malfunctioning flex arm.

Table 2-4. Troubleshooting Guide: Flex Arm

Problem	Symptom	Probable Cause	Check	Correction
Flex arm will not lock.	Flex arm will not lock.	Lock pawls damaged.	Inspect lock pawls for damage.	Replace lock pawls. Refer to para 4.37.
		Lock cylinder valve *[in flex arm]* is malfunctioning.	Remove 1/8 in. brown tubing from lock cylinder and check for residual air pressure (residual air pressure indicates bleed port is not working).	Replace lock cylinder valve. Refer to para 4.38.
		Unlock button valve(s) *[on delivery unit handles]* malfunctioning.	Without depressing unlock button(s), remove 1/8 in. brown tubing from unlock button valves and check for air pressure.	Replace unlock button valve(s) if air pressure is detected. Refer to para 4.8.
Flex arm will not unlock.	Lock cylinder energizes, but flex arm will not unlock.	Locking pawls *[in flex arm]* have become loose and have slipped off of arm lock cylinder pin.	Check to see if pawls are installed on arm lock cylinder pin.	Re-install locking pawls back on arm lock cylinder pin and tighten mounting hardware.
	Lock cylinder does not energize.	Unlock button valve(s) *[on delivery unit handles]* malfunctioning.	While depressing unlock button(s), remove 1/8 in. brown tubing from unlock button valves and check for air pressure.	Replace unlock button valve(s) if air pressure is not detected. Refer to para 4.8.
		Lock cylinder valve *[in flex arm]* is malfunctioning.	While depressing unlock button(s), remove 1/8 in. brown tubing from lock cylinder valve and check for air pressure.	Replace lock cylinder valve if air pressure is detected. Refer to para 4.38.
Flex arm drifts.	Flex arm drifts down.	Spring tension jam nut *[in flex arm]* needs adjusted.	–	Tighten spring tension jam nut. Refer to para 4.36.
	Flex arm drifts up.	Spring tension jam nut *[in flex arm]* needs adjusted.	–	Loosen spring tension jam nut. Refer to para 4.36.
Excessive rotation.	Flex arm can be rotated more than 120°.	Rotation stop pin(s) *[top of fixed arm]* missing or broken.	Check for missing or broken stop pins.	Replace stop pin(s).
		Rotation stop screw *[top of fixed arm]* missing or broken.	Check for missing rotation stop screw.	Replace rotation stop screw.

SECTION III
SCHEDULED MAINTENANCE

3.1 Scheduled Maintenance

Table 3-1 is a Scheduled Maintenance Chart which lists the inspections and services that should be performed periodically on the delivery system. These inspections and services should be performed as often as indicated in the chart.

Table 3-1. Scheduled Maintenance

Interval	Inspection or Service	What to Do
Semi-annually	Obvious damage	Visually check condition of delivery system for obvious damage such as: cracks in components, missing components, dents in components, or any other visible damage which would cause the delivery system to be unsafe to operate or would compromise its performance. Repair delivery system as necessary.
	Fasteners / hardware	Check delivery system for missing or loose fasteners / hardware. Replace any missing hardware and tighten any loose fasteners as necessary.
	Warning and instructional decals	Check for missing or illegible decals. Replace decals as necessary.
	Tubing Connections	Remove covers and check for loose tubing connections. Reconnect tubing as necessary.
	Damaged Tubing	Check handpiece and syringe tubing for air/water leaks or other visible damage. Remove covers and check internal tubing for air/water leaks or other visible damage. Replace damaged tubing as necessary.
	Kink Valves	Remove delivery head cover and check kink valves for proper operation. No air/water leaks should be apparent. Replace kink valve(s) as necessary. Refer to para 4.5.
	Regulator Valves	Check that regulator valves are set to the recommended settings. Water Regulator: 40 PSI Air Regulator w/gauge: 80 PSI Air Regulator w/o gauge: Factory set at 40 PSI (Do not adjust) Adjust regulator valves as necessary. Refer to para 4.1.
	Delivery Unit Flex Arm	Check that flex arm will not move downward without depressing Unlock Buttons *[on delivery unit handles]*. Replace or adjust any malfunctioning components.
	Cuspidor Bowl Flush Valve	Check that cuspidor bowl flush valve runs for the desired length of time when cuspidor flush button is pressed. Adjust bowl flush timing valve if necessary. Refer to para 4.29.
	Cuspidor Cup Fill Valve	Check that cuspidor cup fill valve runs for the desired length of time when either of the cup fill buttons are pressed. Adjust cup fill timing valve if necessary. Refer to para 4.29.

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SECTION IV
MAINTENANCE / SERVICE INSTRUCTIONS

Delivery Unit

4.1 Typical Regulator Adjustment

A. Adjustment

EQUIPMENT ALERT
The operatory equipment has been designed to operate at the recommended settings. Adjusting the pressure higher or lower can damage the equipment and/or result in decreased operating efficiency.

(1) Pull adjustment knob (FIgure 4-1) outward to unlock.

(2) Rotate adjustment knob:
clockwise to decrease pressure.
counterclockwise to increase pressure.

(3) Push adjustment knob inward to lock.

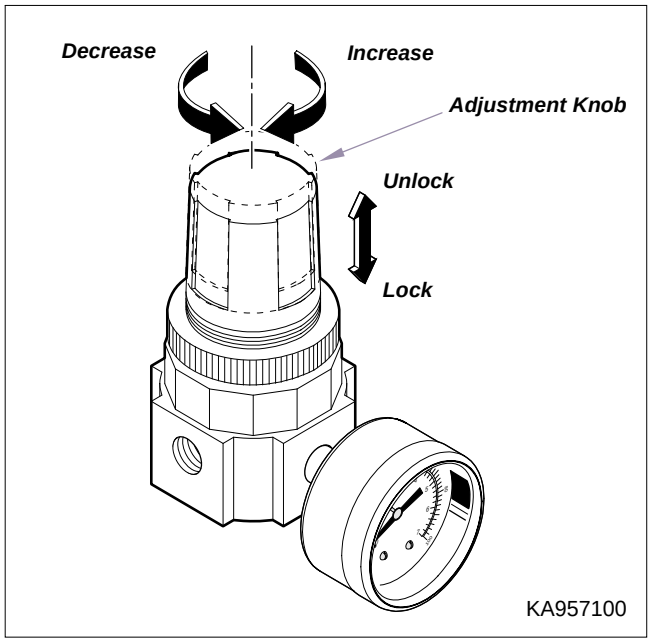

Figure 4-1. Typical Regulator Adjustment

4.2 Typical Regulator Removal / Installation

A. Removal

(1) Turn air and water manual shut-off valves (1, Figure 4-2) OFF.

(2) Tag and disconnect any tubing connected to fittings of regulator (2).

(3) Remove locking ring (3) from regulator (2); then remove from mounting plate (4).

NOTE
If removing water bottle air regulator (w/o gauge), the following step is not necessary. Go to step 5.

(4) Unscrew regulator (2) from master pilot shut-off valve (5).

(5) Remove gauge (6), and any fittings (7) or plugs (8) from regulator (2).

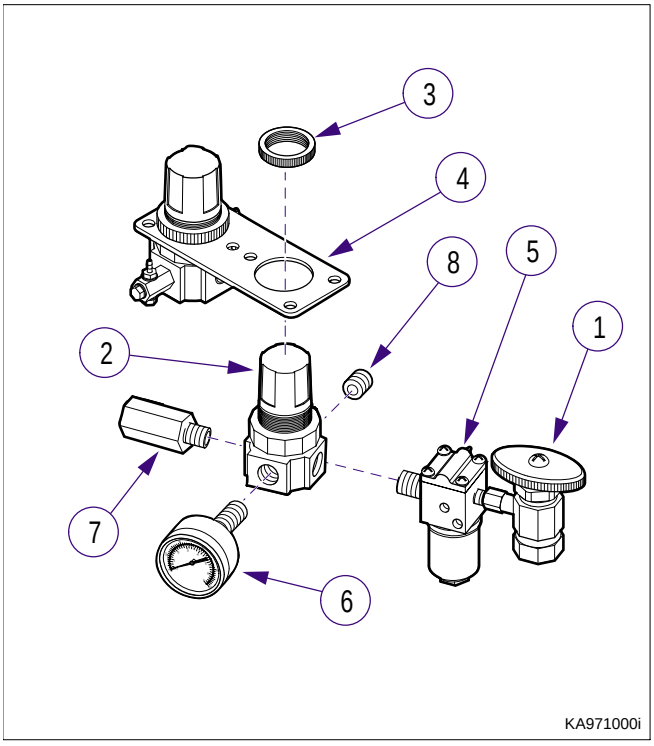

Figure 4-2. Typical Regulator Removal / Installation

B. Installation

(1) Install gauge (6), and any fittings (7) or plugs (8) *[removed in step 5]* into regulator (2).

NOTE
If installing water bottle air regulator (w/o gauge), the following step is not necessary. Go to step 3.

(2) Apply removable loctite, then screw regulator (2) onto fitting of master pilot shut-off valve (5).

(3) If necessary, install mounting plate (4); then secure regulator (2) with locking ring (3).

(4) Connect tubing to proper fittings of regulator.

(5) Turn air and water manual shut-off valves (1) ON and check for proper operation.

4.3 Typical Master Pilot Shut-Off Valve Removal / Installation

A. Removal

(1) Turn air and water manual shut-off valves (1, Figure 4-3) OFF.

(2) Tag and disconnect all tubing connected to master pilot shut-off valve (2).

(3) Remove locking ring (3) from regulator (4); then remove mounting plate (5) from regulator.

(4) Loosen compression nut (6) and remove master pilot shut-off valve (2) from manual shut-off valve (1).

(5) Unscrew master pilot shut-off valve (2) from regulator (4).

(6) Remove any fittings/plugs/gaskets (7) from master pilot shut-off valve (2).

B. Installation

(1) Install any fittings/plugs/gaskets (7) *[removed in step 6]* into master pilot shut-off valve (2).

(2) Apply removable loctite, then screw master pilot shut-off valve (2) onto fitting of regulator (4).

EQUIPMENT ALERT
When performing the following step, it may be necessary to replace the compression sleeve. Failure to do so could cause connection to leak.

(3) Insert master pilot shut-off valve (2) into manual shut-off valve (1); then tighten compression nut (6).

(4) Place mounting plate (5) over regulator (4); then secure regulator with locking ring (3).

(5) Connect tubing to proper fittings of master pilot shut-off valve (2).

(6) Turn air and water manual shut-off valves (1) ON and check for proper operation.

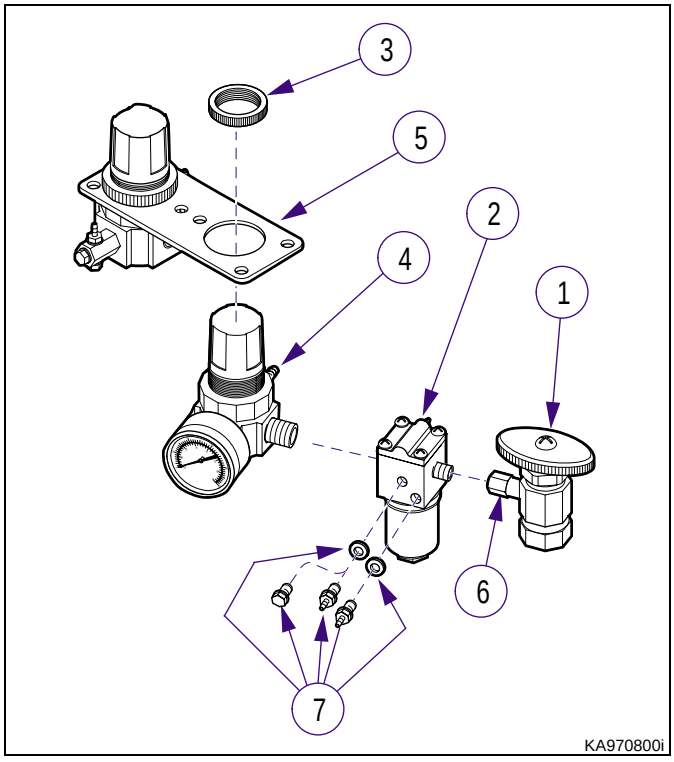

Figure 4-3. Typical Master Pilot Shut-Off Valve Removal / Installation

4.4 Whip-style Delivery Unit Cover Removal

A. Removal

(1) Turn master ON/OFF switch OFF.

(2) Remove instrument pad (1, Figure 4-4). *[The instrument pad is pressure fit onto two studs; no tools are required].*

(3) Remove four screws (2) and delivery unit cover (3).

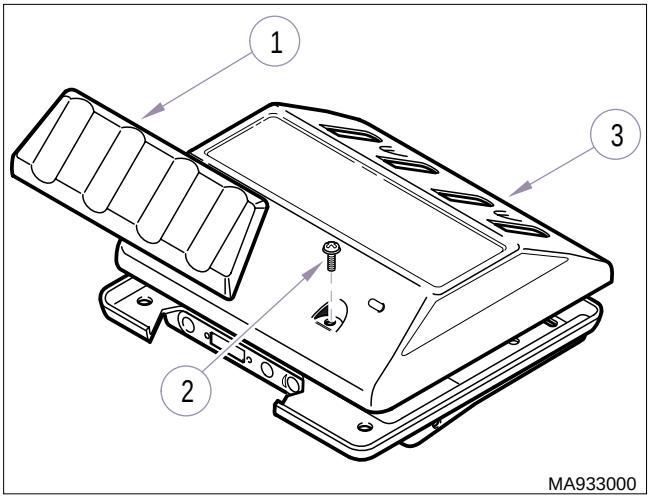

Figure 4-4. Whip-style Delivery Unit Cover Removal

4.5 Kink Valve Removal / Installation

A. Removal

NOTE
The ProCenter® Delivery Unit is shown in Figure 4-5. The procedure for the Whip & casework mounted units is similar.

(1) Turn master ON/OFF switch (1, Fig. 4-5) OFF.

(2) Depress Panel Unlock button (2) to access internal components.

(3) Tag and disconnect tubing from six kink valve fittings (3), and three kink valve manifold fittings (4).

EQUIPMENT ALERT
On Whip Units, the kink valves are mounted to spacer blocks instead of the lower housing. Do not remove the spacer block when replacing the kink valve. Removing the spacer block will release the whip spring.

(4) Remove screw (5) and kink valve assembly (6).

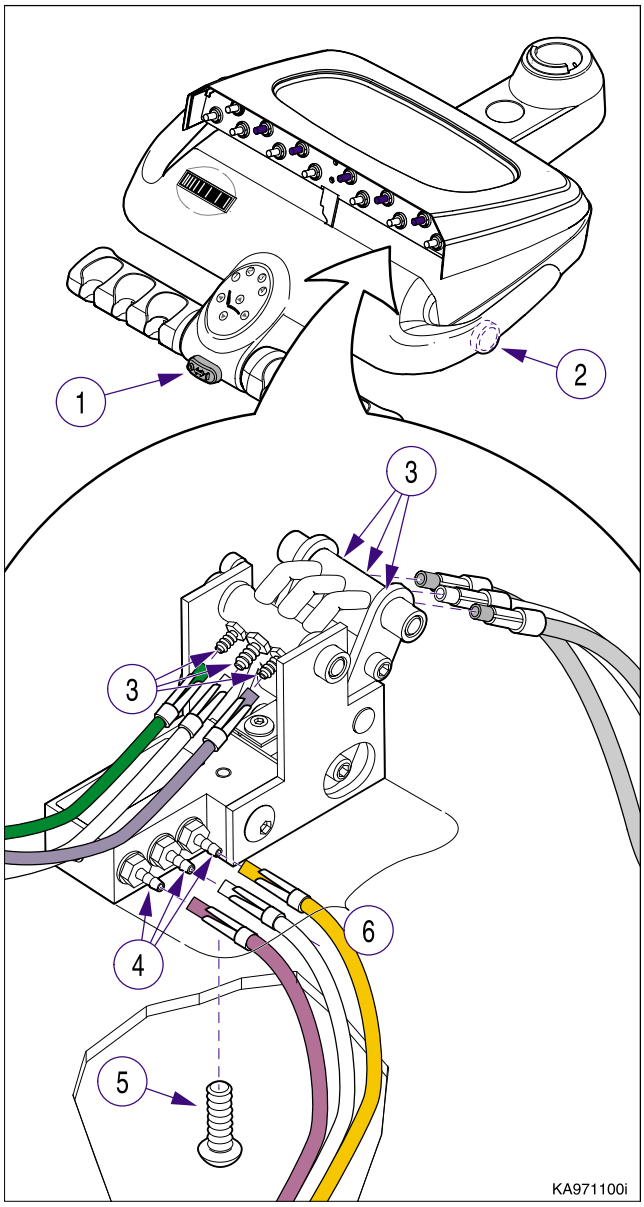

Figure 4-5. Kink Valve (ProCenter shown)

B. Installation

(1) Connect tubing to proper kink valve fittings (3), and proper kink valve manifold fittings (4).

(2) Position kink valve (6) and secure with screw (5).

(3) Turn master ON/OFF switch (1) ON, and check for proper operation.

C. Adjustment *(Whip Units Only)*

NOTE
Whip-style delivery units use an actuator assembly (1, Figure 4-6) attached to the kink valve (2). The actuator contains a normally closed On/Off Valve (3) that opens, supplying pilot air to the kink valve, when the instrument is lifted from the instrument pad. The actuator can be adjusted.

(1) Remove delivery unit cover. Refer to para 4.4.

(2) To adjust the actuator (1, Figure 4-6), loosen the jam nut (4) and turn the adjustment screw (5) inward to open the valve or outward to close the valve.

(3) Check operation.

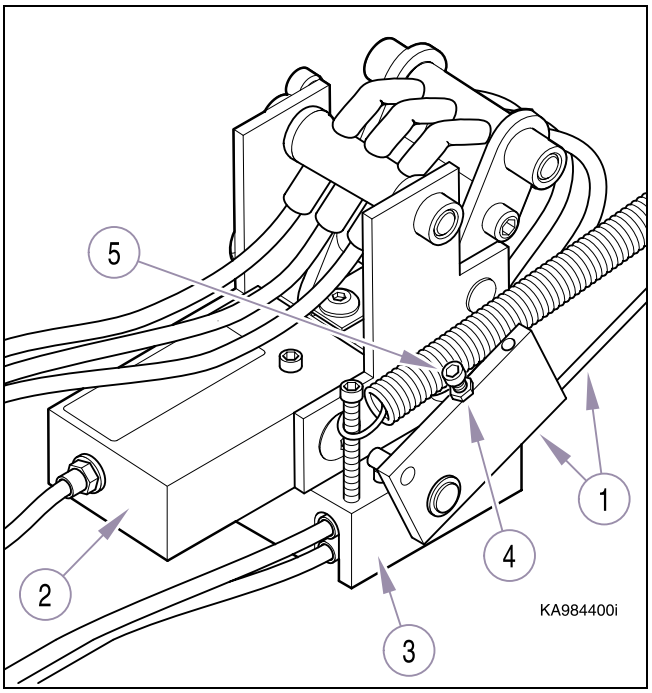

Figure 4-6. Adjustment *(Whip Units <u>only</u>)*

4.6 Foot Control Removal / Installation

A. Removal

(1) Access air / water regulators.

<u>In Junction Box / Cabinet Base:</u>

(2) Disconnect 1/4 in. grey tubing (w/rib) (1, Figure 4-7) from fitting (A) of air regulator (2).

(3) Disconnect 1/4 in. grey tubing (plain) (3) from 1/4 in. clear tubing (4).

(4) Disconnect 1/8 in. grey tubing (above ribbed) (5) from 1/8 in. orange tubing (6).

(5) Disconnect 1/8 in. grey tubing (above plain) (7) from 1/8 in. green tubing (8).

(6) Remove foot control.

B. Installation

<u>Air to Foot Control</u>

(1) Connect 1/4 in. grey tubing (ribbed) (1) ***[from foot control]*** to fitting (A) of air regulator (2). Secure with sleeve.

<u>Handpiece Drive Air</u>

(2) Connect 1/4 in. grey tubing (plain) (3) ***[from foot control]*** to 1/4 in. clear tubing (4) ***[from umbilical]***. Secure with sleeve.

<u>Handpiece Coolant Water Pilot Air</u>

(3) Connect 1/8 in. grey tubing (above ribbed) (5) ***[from foot control]*** to 1/8 in. orange tubing (6) ***[from umbilical]***. Secure with uni-clamp.

<u>Handpiece Coolant Air</u>

(4) Connect 1/8 in. grey tubing (above plain) (7) ***[from foot control]*** to 1/8 in. green tubing (8) ***[from umbilical]***. Secure with uni-clamp.

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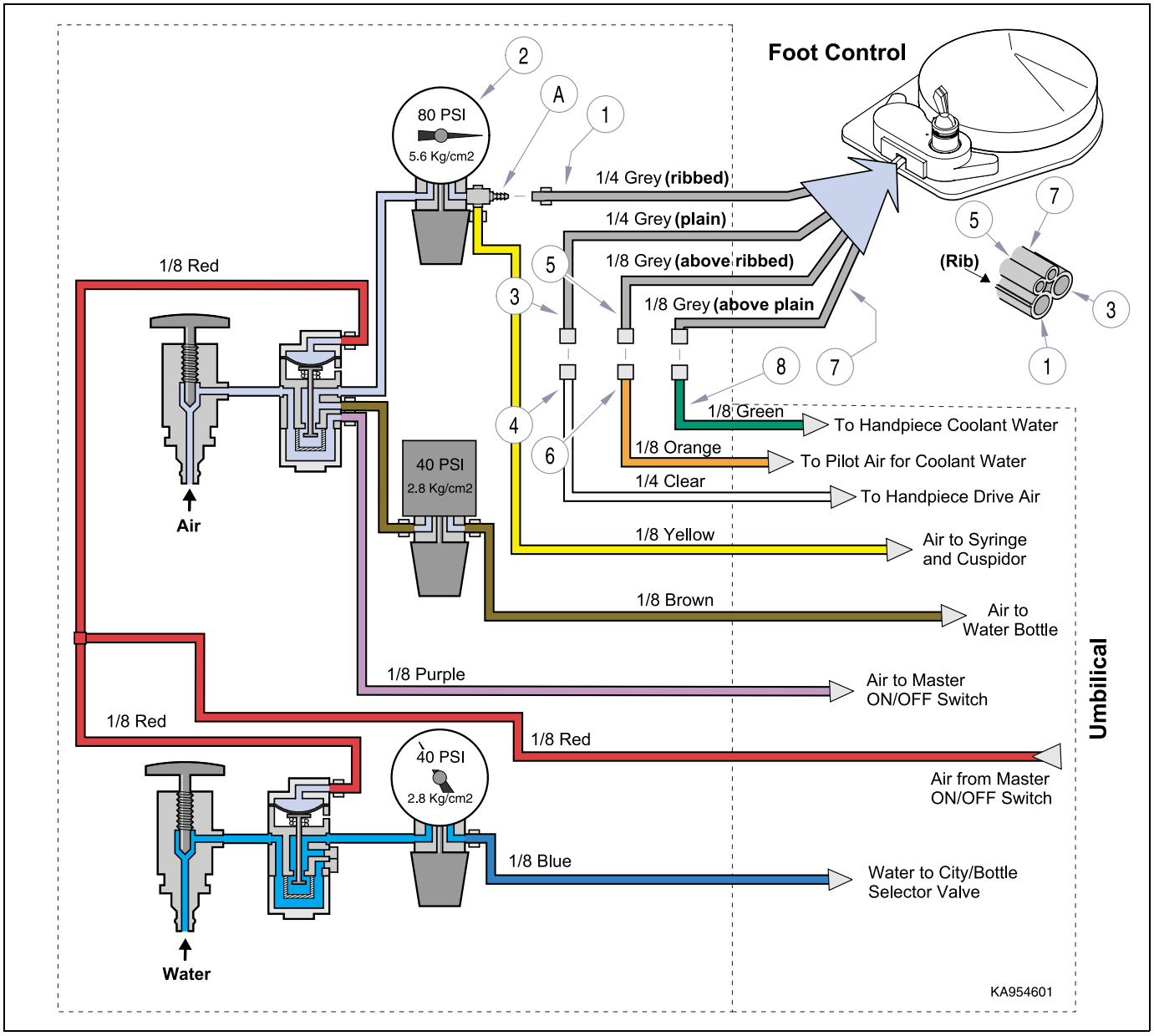

Figure 4-7. Foot Control Removal / Installation

4.7 Water Bottle Gasket Replacement

A. Removal

NOTE
Figure 4-8 shows a console mounted water bottle. The procedure for LR, & casework mounted systems is the same.

(1) Unscrew water bottle (1, Figure 4-8) and set aside.

(2) Remove damaged gasket (2) from bottle mounting cap (3).

B. Installation

EQUIPMENT ALERT
When performing the following step, be sure gasket is properly aligned with top of water bottle. Failure to comply could result in damage to gasket.

(1) Align new gasket (2) on top of water bottle (1).

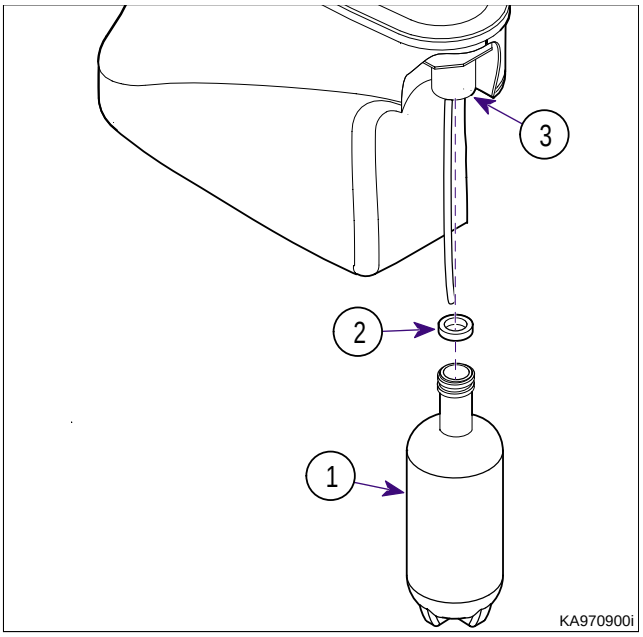

Figure 4-8. Water Bottle Gasket Replacement

(2) Route tubing into water bottle (1); then screw bottle into bottle mounting cap (3).

4.8 Flex Arm Unlock Button Valve Removal / Installation / Adjustment

A. Removal

(1) Turn master ON/OFF switch *[on delivery unit]* OFF.

(2) Remove three screws (1, Figure 4-9), lower handle cover (2), and switch lever (3).

(3) Tag and disconnect 1/8 in. brown tubing (4) and 1/8 in. red tubing (5) from valve (6); then remove valve.

B. Installation

(1) Connect 1/8 in. brown tubing (4) and 1/8 in. red tubing (5) to proper fittings of valve (6).

(2) Install switch lever (3) in slot of lower handle cover (2); then position valve (6) in switch lever (3).

(3) Install lower handle cover (2) and secure with three screws (1).

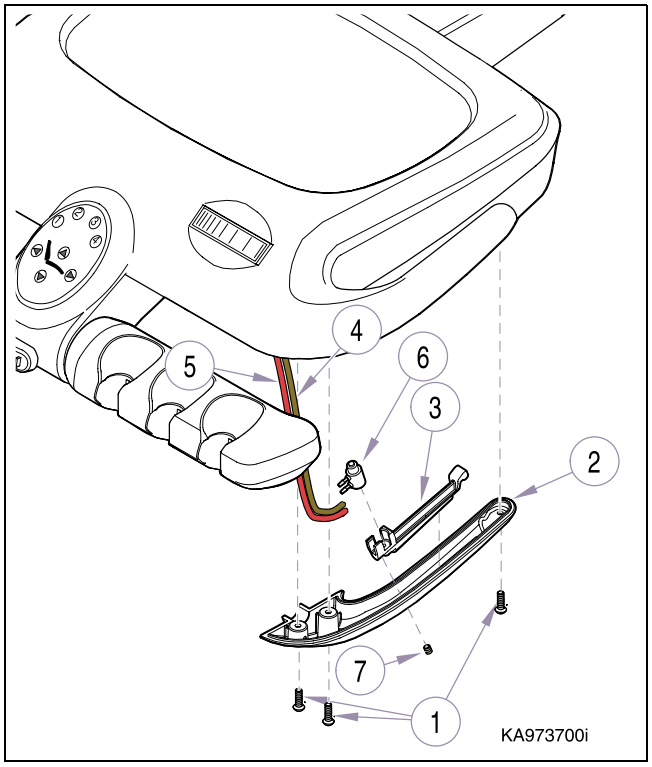

Figure 4-9. Flex Arm Unlock Button Valve

C. Adjustment

(1) If necessary, adjust position of valve (6) by loosening/tightening set screw (7).

4.9 Handpiece Holder Valve Removal / Installation / Adjustment *(ProCenter-style Units only)*

NOTE
Figure 4-10 shows the chair mounted version of the delivery unit. The procedure for casework mounted units is similar.

A. Removal

(1) Remove two screws (1, Figure 4-10) and cover (2).

(2) Remove two screws (3), actuator block (4), lever (5), and valve (6).

(3) Tag and disconnect 1/8 in. purple tubing and 1/8 in. red tubing from valve (6).

B. Installation

(1) Connect 1/8 in. purple tubing and 1/8 in. red tubing to proper fittings of valve (6).

(2) Position valve (6) in actuator block (4); then while holding lever (5) in position, secure actuator block with two screws (3).

(3) Install cover (2) and secure with two screws (1).

C. Adjustment

(1) If kink valve does not open completely when handpiece is removed from holder, **loosen** set screw (7).

(2) If kink valve does not close completely when handpiece is properly stowed in holder, **tighten** set screw (7).

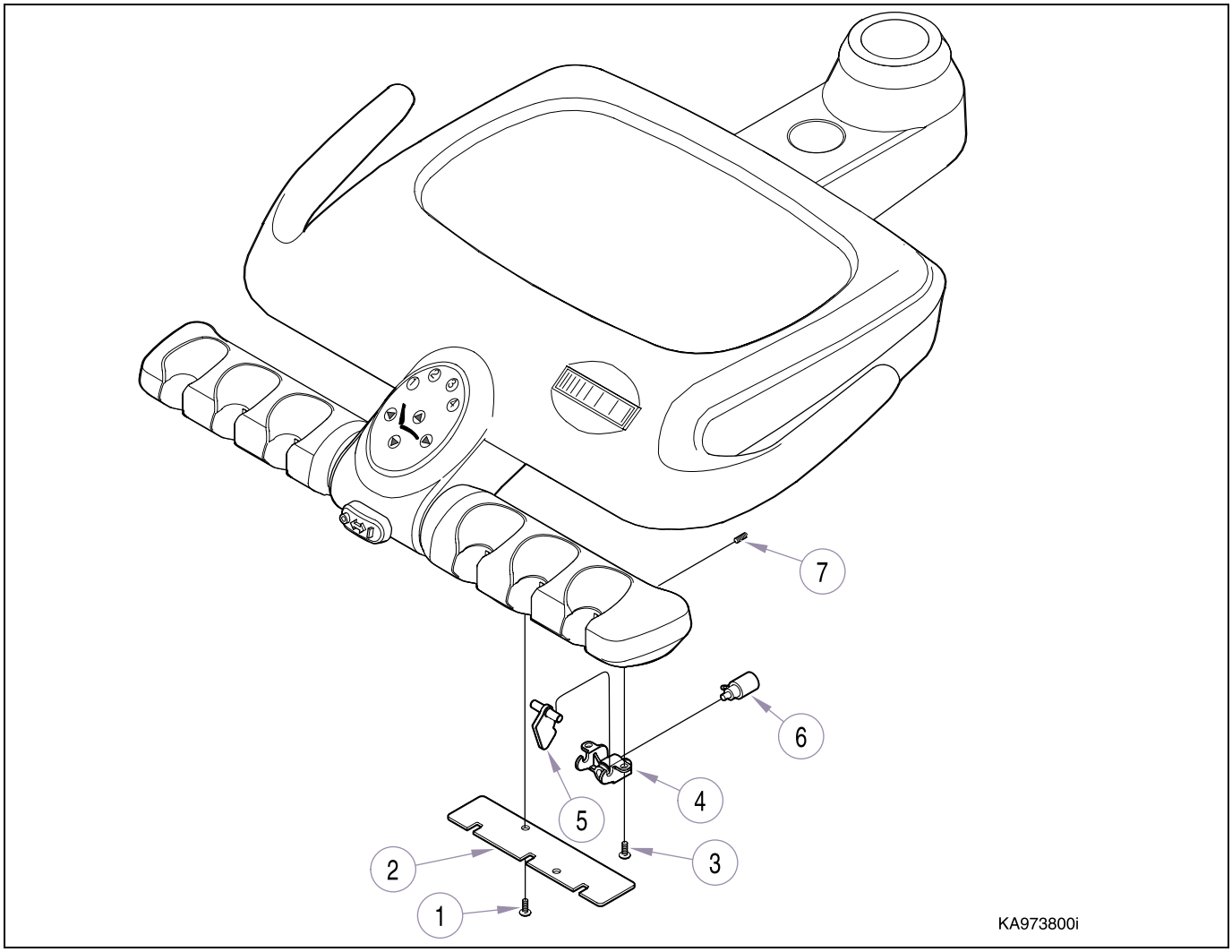

Figure 4-10. ProCenter Handpiece Holder Valve Removal / Installation / Adjustment
(Chair / Console Mounted Version shown)

4.10 Typical Adjustment Valve Removal / Installation

A. Removal

(1) Turn master ON/OFF switch (1, FIgure 4-11) OFF.

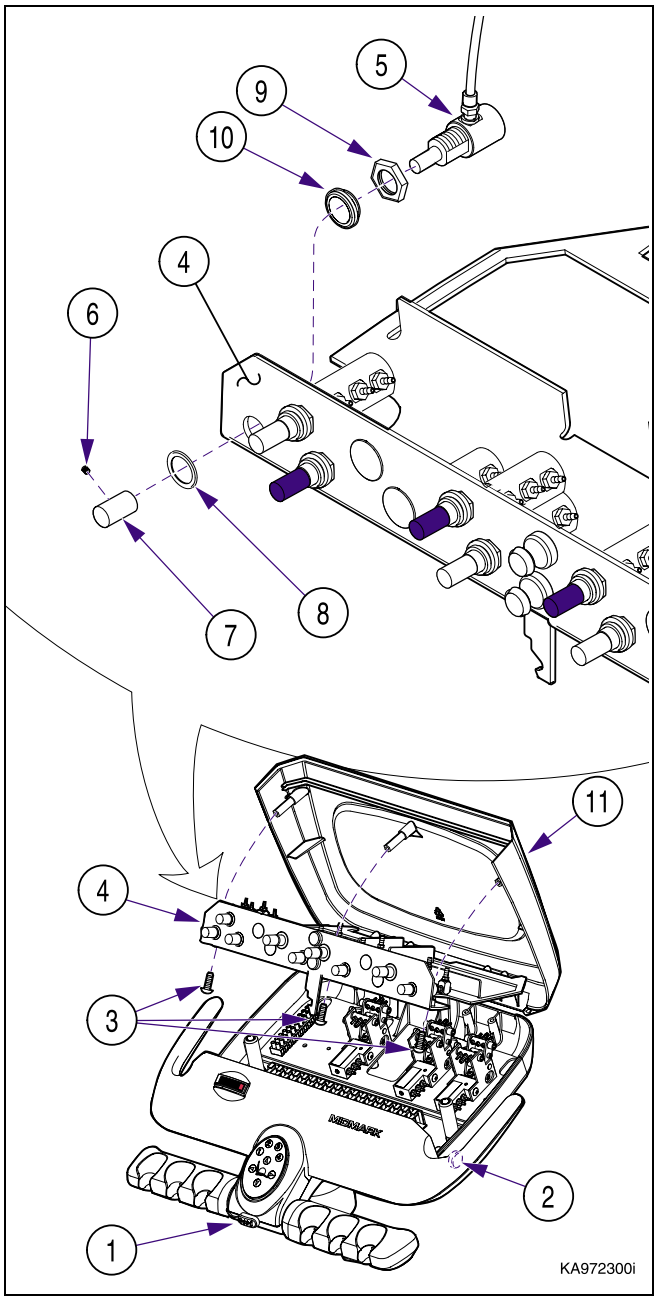

Figure 4-11. Typical Adjustment Valve Removal / Installation
(ProCenter Chair / Console Mtd. Version shown)

NOTE
Steps 2 & 3 do not apply to casework mounted delivery systems. Go to step 4.

(2) Push panel unlock button (2) to access internal components.

(3) Remove three screws (3); then lower lid cover (4) to access adjustment valve (5).

(4) Tag and disconnect all tubing connected to adjustment valve (5).

(5) Loosen set screw (6) and remove adjustment knob (7).

(6) Hold trim ring (8) in place, then unscrew adjustment valve (5).

(7) Remove adjustment valve (5), nut (9), washer (10), and trim ring (8) from lid cover (4).

B. Installation

(1) Insert adjustment valve (5) thru nut (9), washer (10), and lid cover (4).

(2) Secure adjustment valve (5) with trim ring (8).

(3) Turn valve stem clockwise as far as it will go; then install adjustment knob (7) and tighten set screw (6).

(4) Connect all tubing to proper fittings of adjustment valve (5).

(5) Raise lid cover (4); then secure to upper housing (11) with three screws (3).

(6) Close upper housing; then turn master ON/OFF switch (1) ON and check for proper operation.

4.11 Master ON/OFF Switch Valve

(Chair Mounted ProCenter®-style units)

A. Removal

(1) Turn air manual shut-off valve *[in junction box]* OFF.

(2) Press air button of syringe(s) until all residual air pressure is removed from the system.

EQUIPMENT ALERT
Residual air pressure will eject the plunger from the master ON/OFF switch valve. Be sure all air pressure is removed from the system before performing the following step.

(3) Remove six screws (1, Figure 4-12) and two screws (2); then partially separate front cover (3) and remove master switch (4).

(4) Remove plunger (5) from valve (6).

(5) Remove two screws (7) and partially separate instrument holder (8) from bottom housing (9); then slide valve (6) out of instrument holder.

(6) Tag and disconnect 1/8 in. purple tubing and 1/8 in. red tubing from valve (6).

B. Installation

(1) Connect 1/8 in. purple tubing and 1/8 in. red tubing to proper fittings of valve (6).

(2) Slide valve (6) into instrument holder (8).

(3) Secure instrument holder (8) to bottom housing (9) with two screws (7).

(4) Install plunger (5) into valve (6).

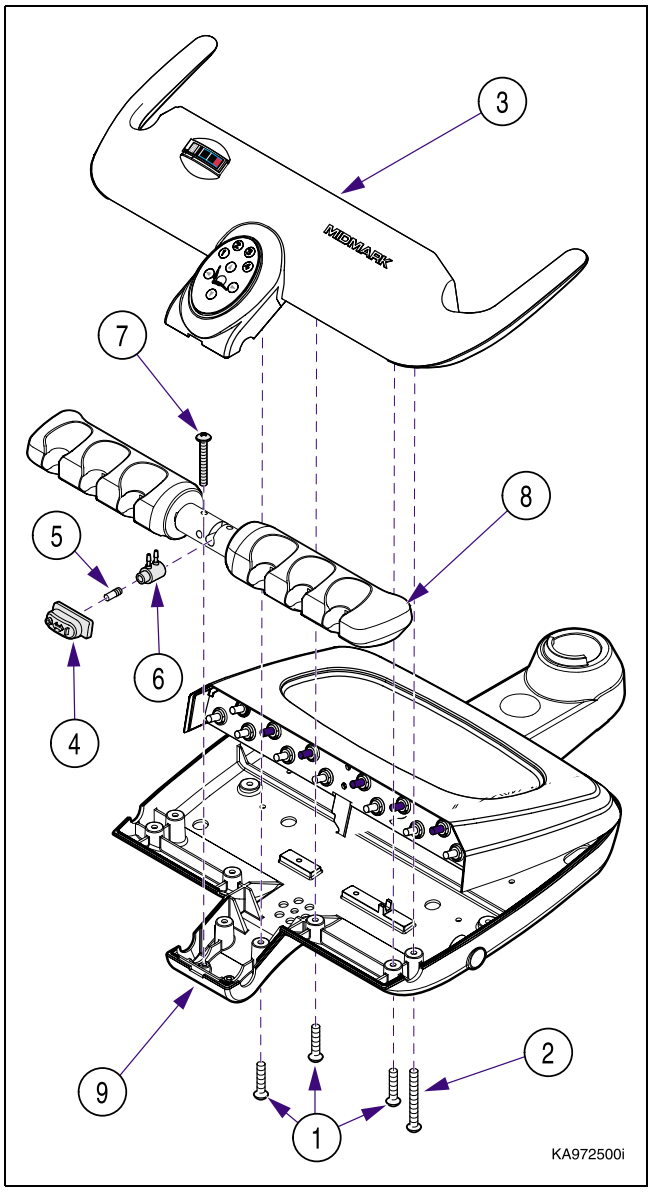

Figure 4-12. Master ON/OFF Switch Valve
(Chair Mounted ProCenter-style Units)

(5) Position master switch (4) and front cover (3) on bottom housing (9); then secure with two screws (2) and six screws (1).

4.12 Master ON/OFF Switch Valve

(12:00 Casework Mounted ProCenter®-style units)

A. Removal

(1) Turn air manual shut-off valve *[in cabinet base]* OFF.

(2) Tag and disconnect tubing from toggle valve (1, Figure 13).

(3) Hold toggle valve (1) in place and remove trim ring (2); then remove toggle valve (1) from water bottle bracket (3).

B. Installation

(1) Insert toggle valve (1) thru water bottle bracket (3) and secure with trim ring (2).

(2) Connect tubing to proper fittings of toggle valve (1).

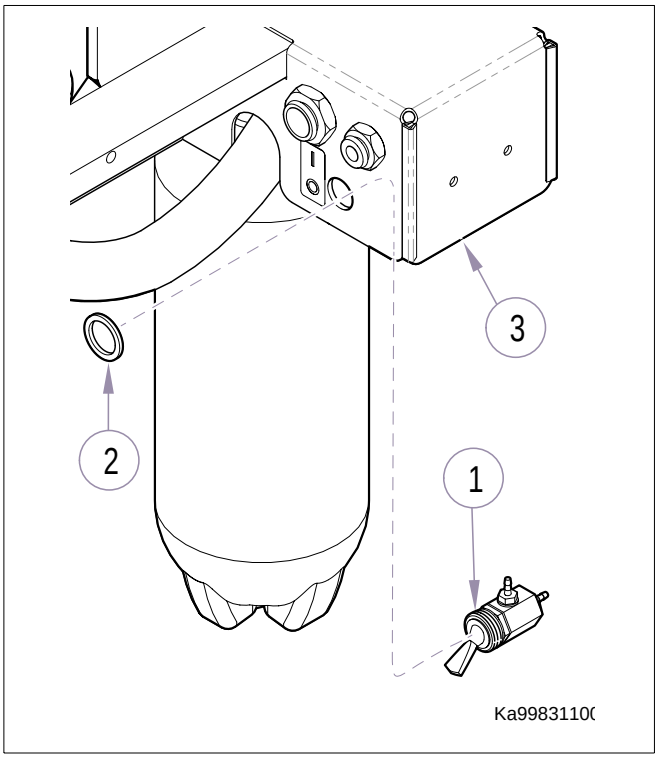

Figure 4-13. Master ON/OFF Switch Valve
(12:00 Casework Mtd. ProCenter-style Units)

4.13 Master ON/OFF Switch Valve

(Whip-style Units)

A. Removal

(1) Turn air manual shut-off valve *[in junction box]* OFF.

(2) Press air button of syringe(s) until <u>all</u> residual air pressure is removed from the system.

(3) Remove the top cover. Refer to para 4.4.

(4) Disconnect the tubing (1, Fig. 4-14) from the Master On / Off toggle valve (2).

(5) While holding the threaded ring (3) that secures the On / Off Toggle Valve (2) to the case, loosen the jam nut (4).

(6) Remove the threaded ring (3), then remove the Master On / Off Valve (2), jam nut (4) and lock-washer (5).

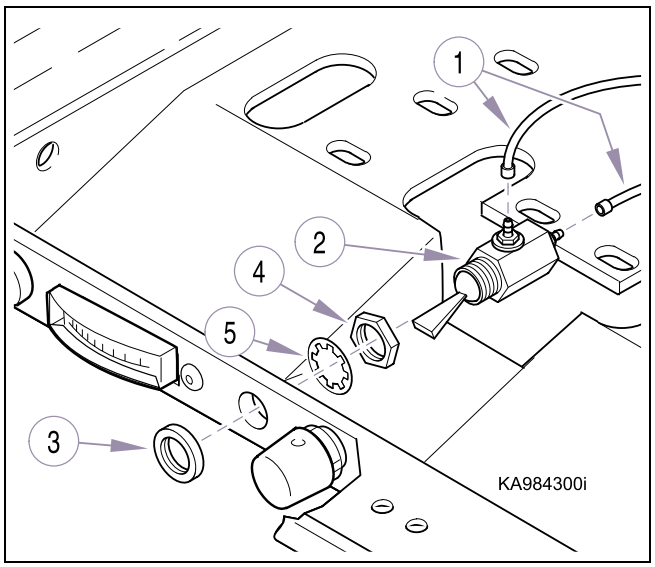

Figure 4-14. Master On/Off Switch
(Whip-style Units)

B. Installation

(1) Place the jam nut (4) and lockwasher (5) on to the On / Off Toggle Valve (2) and place it in position in the bottom cover.

EQUIPMENT ALERT
Position the outlet (top fitting) on the valve upward to assure the toggle works in conjunction with the On / Off symbols on the cover.

(2) Place the threaded ring (3) onto the end of the On / Off Toggle valve and tighten.

(3) Connect the 1/8" red tubing to the top (outlet) fitting and the 1/8" purple tubing to the end (inlet) fitting.

4.14 Coolant Water Flush Valve Removal / Installation

(Chair Mtd. ProCenter Units & Whip-style Units)

A. Removal

(1) Turn master ON/OFF switch (1, Figure 4-14) OFF.

NOTE
Remove the top cover on the Whip. Refer to para 4.4.

(2) Push panel unlock button (2) to access internal components; use a prop to hold up lid if necessary.

(3) Tag and disconnect tubing from flush valve (3).

(4) Loosen set screw (4) and remove adjustment knob (5).

(5) Unscrew flush valve (3); remove valve, nut (6), washer (7), and trim ring (8) from housing.

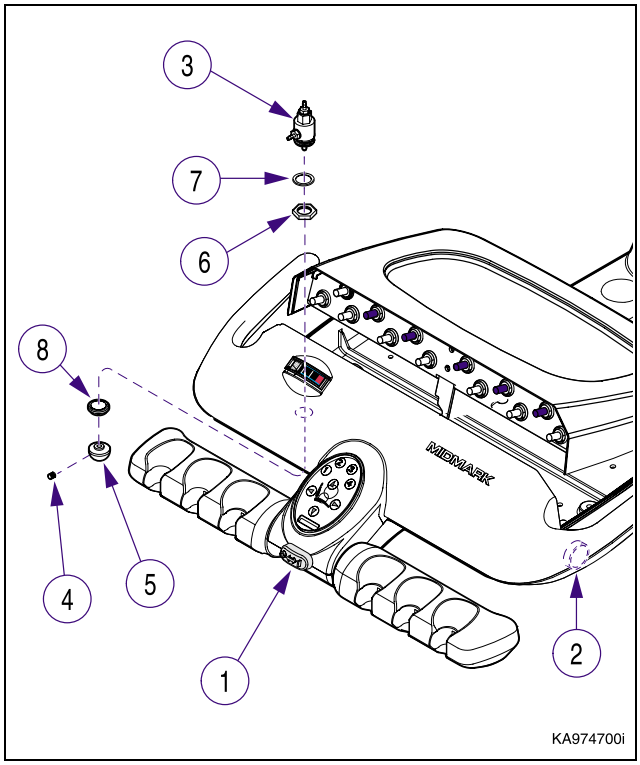

Figure 4-14. Coolant Water Flush Valve
(Chair Mtd. ProCenter Unit shown)

B. Installation

(1) Insert flush valve (3) thru washer (7) and nut (6); then insert valve thru hole in housing and secure to with trim ring (8).

(2) Secure flush valve (3) with trim ring (8).

(3) Install adjustment knob (5); then tighten set screw (4).

(4) Connect 1/8 in. yellow (blue) inlet tubing and 1/8 in. orange (white) outlet tubing to proper fittings of flush valve (3).

(5) Close upper housing, or install cover on Whip unit; then turn master ON/OFF switch (1) ON and check for proper operation.

4.15 Coolant Water Flush Valve Removal / Installation

(12:00 Casework Mtd. ProCenter Units)

A. Removal

(1) Turn Master ON/OFF switch OFF.

(2) Tag and disconnect tubing from flush valve (1, Figure 15).

(3) Loosen set screw (2) and remove adjustment knob (3).

(4) Hold flush valve (1) in place and remove trim ring (4); then remove flush valve (1) from water bottle bracket (5).

B. Installation

(1) Insert flush valve (1) thru water bottle bracket (5) and secure with trim ring (4).

(2) Connect tubing to proper fittings of flush valve (1).

(3) Install adjustment knob (3) and tighten set screw (2).

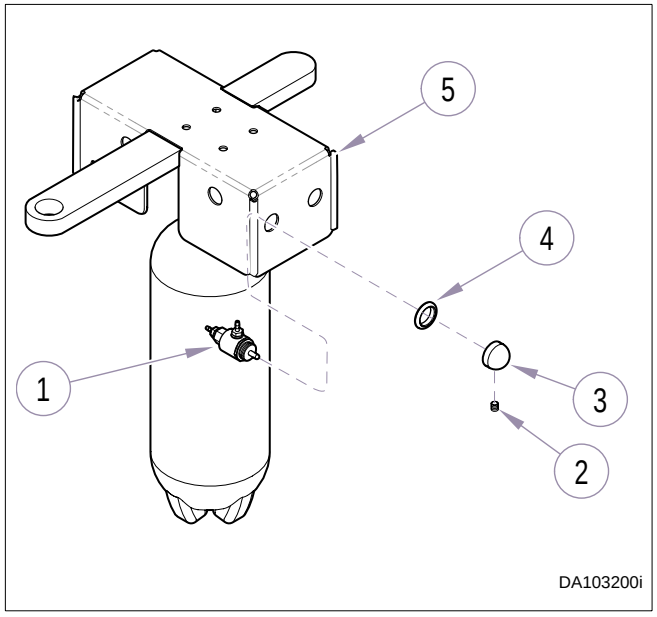

Figure 4-15. Coolant Water Flush Valve Removal / Installation
(12:00 Mounted ProCenter-style Units)

4.16 Typical Supply Manifold Removal / Installation

(ProCenter-style Units)

A. Removal

(1) Turn master ON/OFF switch(1, Figure 4-16) OFF.

NOTE
Steps 2 & 3 do not apply to casework mounted delivery systems. Go to step 4.

(2) Push panel unlock button (2) to access internal components.

NOTE
If replacing pilot air manifold *[mounted in lower housing]*, the following step is not necessary.

(3) Remove three screws (3); then lower lid cover (4) to access manifold (5).

(4) Tag and disconnect all tubing connected to manifold (5).

NOTE
All manifolds are held in place with double sided foam tape. There is no hardware to remove.

(5) Remove manifold (5).

B. Installation

(1) Peel backing from double sided tape *[applied to back of manifold]*; then position manifold (5) and apply pressure to secure.

(2) Connect all tubing to proper fittings of manifold (5).

(3) Raise lid cover (4); then secure to upper housing (6) with three screws (3).

(4) Close upper housing; then turn master ON/OFF switch (1) ON and check for proper operation.

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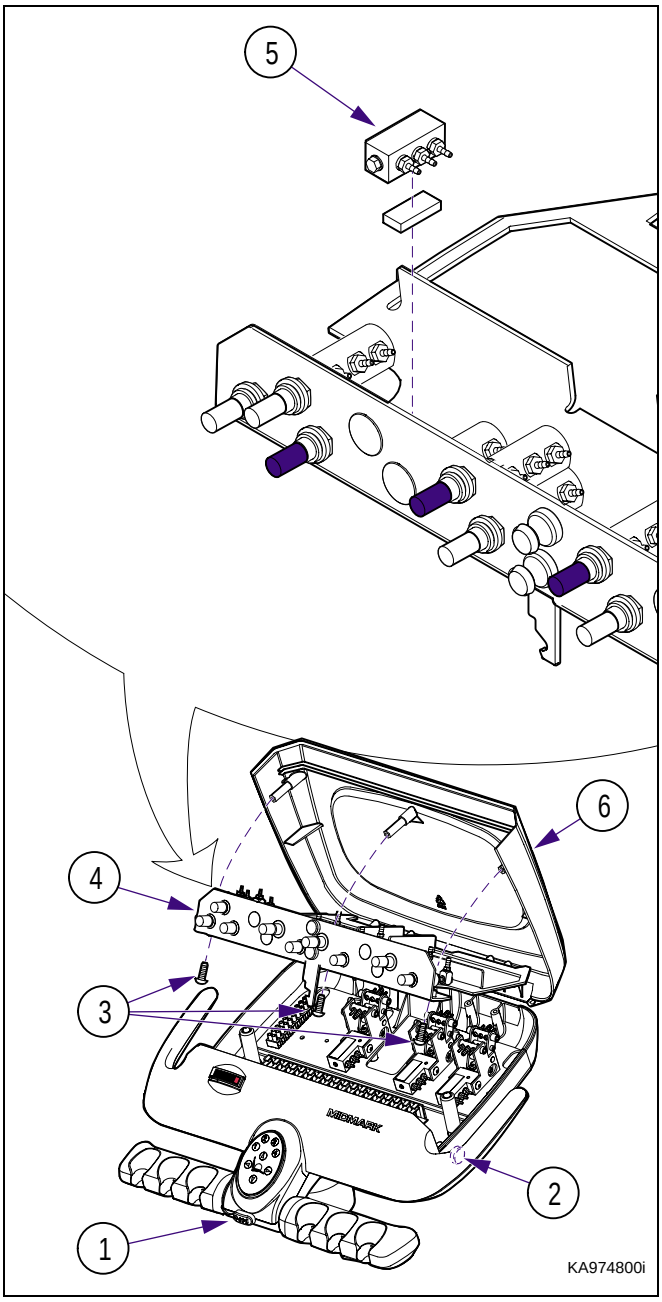

Figure 4-16. Typical Supply Manifold
(Chair Mtd. ProCenter Unit shown)

4.17 ProCenter Delivery Unit Leveling Adjustment *(Chair Mtd Units only)*

A. Adjustment

(1) Remove four screws (1, Figure 4-17) and bottom cover (2).

(2) Loosen three button-head screws (3) slightly.

(3) Place a level on top of delivery unit; then adjust three leveling screws (4) until unit is level.

(4) Tighten three button-head screws (3).

(5) Replace bottom cover (2) and secure with four screws (1).

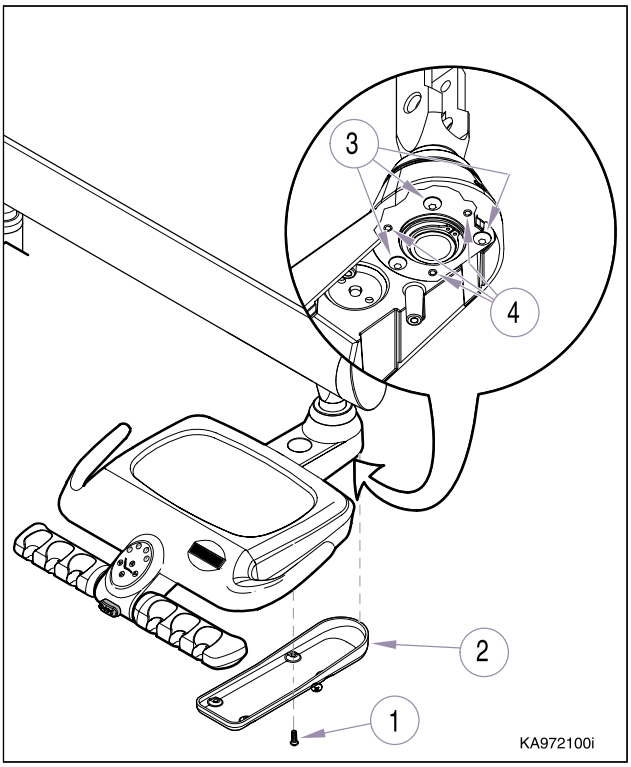

Figure 4-17. Delivery Unit Leveling Adjustment

4.18 LR Delivery Arm Leveling Adjustment

A. Adjustment

(1) Remove seat upholstery; then lift seat frame to access connection box.

(2) Remove four screws (1, Figure 4-18) and connection box cover (2).

(3) Position delivery arm (3) straight out from casting (4) as shown; then adjust three leveling screws (5) until delivery arm is level.

(4) Install connection box cover (2) and secure with four screws (1).

(5) Lower seat frame and replace seat upholstery.

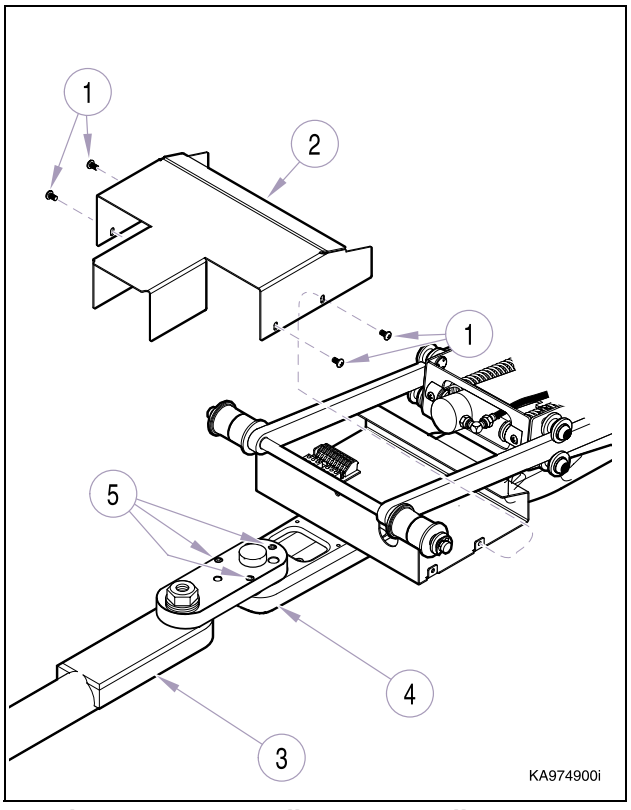

Figure 4-18. LR Delivery Arm Adjustment

4.19 Water Selector Valve Removal / Installation

(Console Mounted Units)

A. Removal

(1) Remove console side cover.

EQUIPMENT ALERT

The three pieces of 1/8 in. blue tubing (1, Figure 4-19) must be connected to the same fittings of valve (2) during installation. Tag tubing before disconnecting to ensure proper installation.

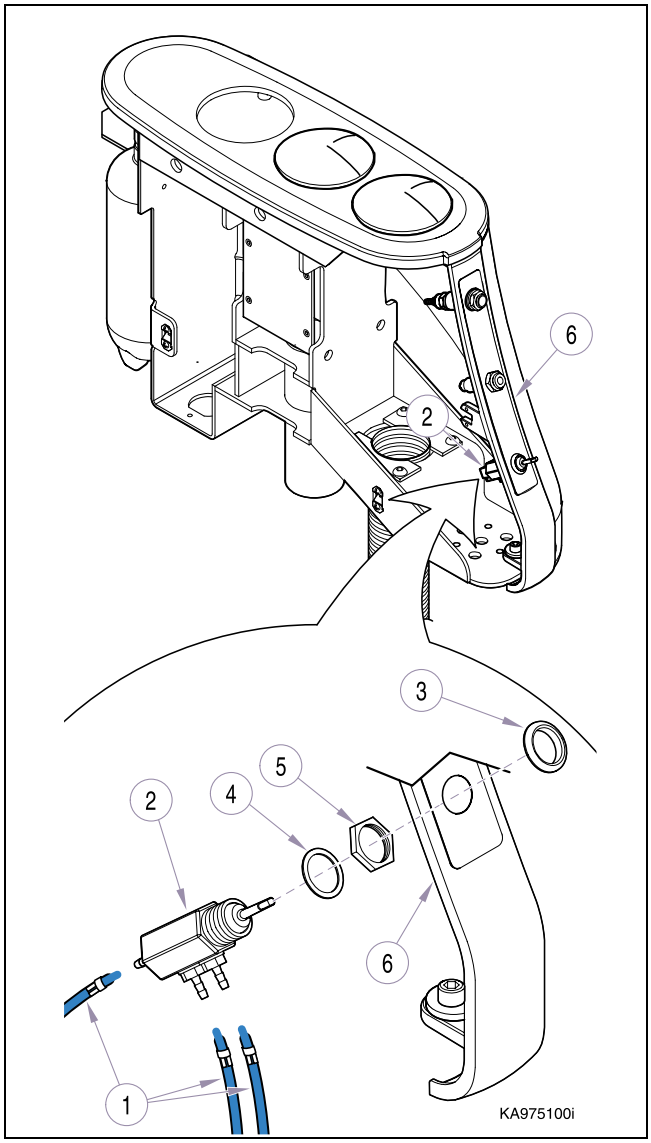

Figure 4-19. Water Selector Valve *(Console)*

(2) Tag and disconnect three pieces of 1/8 in. blue tubing (1, Figure 4-19) from valve (2).

(3) Hold trim ring (3) in place and unscrew valve (2); remove trim ring, valve, washer (4), and nut (5) from console (6).

B. Installation

(1) Install washer (4) and nut (5) onto valve (2).

(2) Insert valve (2) thru hole in console (6); then secure with trim ring (3).

(3) Connect three pieces of 1/8 in. blue tubing to proper fittings of valve (2).

(4) Install console side cover.

4.20 Water Selector Valve Removal / Installation
(LR Units)

A. Removal

(1) Turn master ON/OFF switch *[on delivery unit]* OFF.

(2) Remove water bottle (1, Figure 4-20).

(3) Lift cover (2); then remove two screws (3) and separate bottle cap (4) from bracket (5).

EQUIPMENT ALERT
Residual water pressure in tubing will result in leaks when tubing is removed in the following step. With the toggle switch in "City" position, depress the water button of syringe(s) until all water pressure is removed from the system.

(4) Tag and disconnect 1/8 in. blue tubing (6), 1/8 in. grey tubing w/o rib (7), and 1/8 in. grey tubing w/rib (8) from valve (9).

(5) Remove nut (10), washer (11), valve (9) and jam nut (12) from bracket (5).

B. Installation

(1) Install jam nut (12) onto valve (9); then position valve in bracket (5).

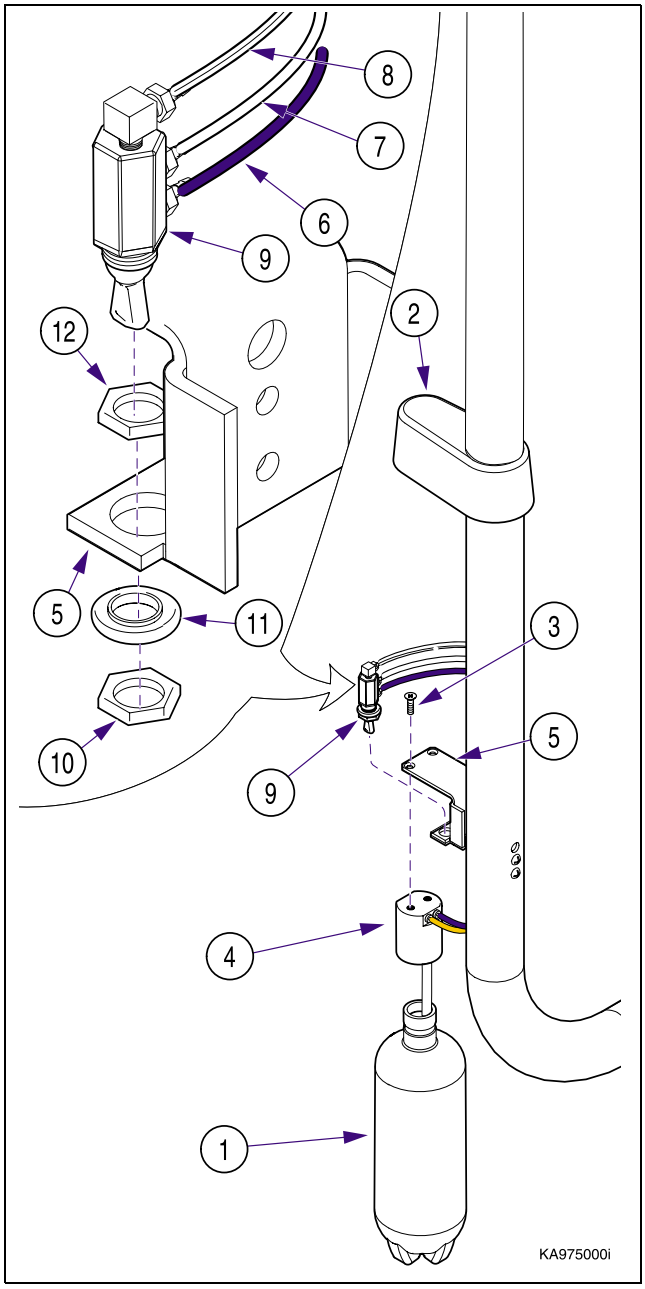

Figure 4-20. Water Selector Valve *(LR Units)*

(2) Connect 1/8 in. grey tubing w/rib (8), 1/8 in. grey tubing w/o rib (7), and 1/8 in. blue tubing (6) to proper fittings of valve (9).

(3) Secure valve (9) to bracket (5) with washer (11) and nut (10).

(4) Secure bottle cap (4) to bracket (5) with two screws (3).

(5) Install water bottle (1); then lower cover (2).

4.21 Water Selector Valve Removal / Installation

(12:00 Mtd. ProCenter Units)

A. Removal

(1) Turn master ON/OFF switch OFF.

(2) Tag and disconnect tubing from toggle valve (1, Figure 21).

(3) Hold toggle valve (1) in place and remove trim ring (2) and washer (3); then remove toggle valve (1) from water bottle bracket (4).

B. Installation

(1) Insert toggle valve (1) thru water bottle bracket (4); then install washer (3) and secure with trim ring (2).

(2) Connect tubing to proper fittings of toggle valve (1)

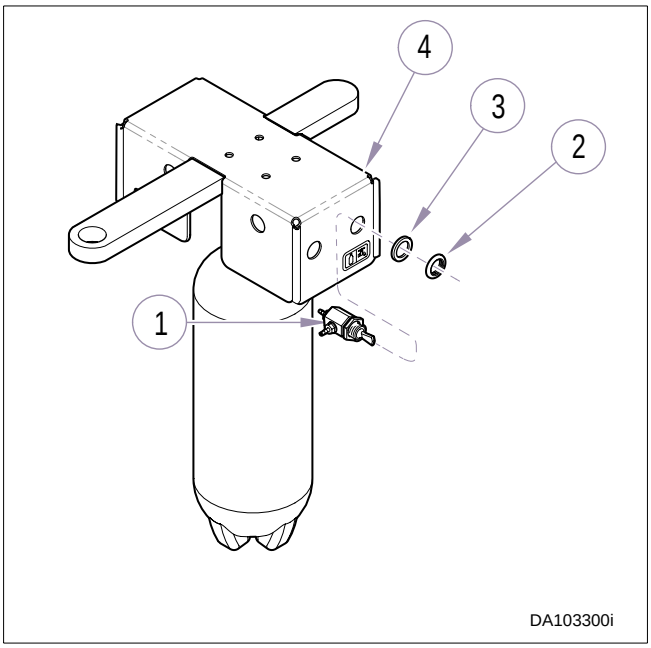

Figure 4-21. Water Selector Valve Removal /Installation
(12:00 Mtd. ProCenter Units)

4.22 Chair Control Touch Pad Removal / Installation

(Chair Mtd ProCenter Units only)

A. Removal

(1) Disconnect all electrical power to operatory.

(2) Turn air manual shut-off valve *[in junction box]* OFF.

(3) Press air button of syringe(s) until all residual air pressure is removed from the system.

EQUIPMENT ALERT
Residual air pressure will eject plunger (A) from the master ON/OFF switch valve. Be sure all air pressure is removed from the system before performing the following step.

(4) Remove six screws (1, Figure 4-22) and two screws (2); then partially separate front cover (3) and remove master switch (4).

(5) Disconnect wire harness (5) from bevel/touch pad (6).

(6) Remove screw (7), bracket (8), and bevel/touch pad (6) from front cover (3).

B. Installation

(1) Secure bevel/touch pad (6) to front cover (3) with bracket (8), and screw (7).

(2) Connect wire harness (5) to bevel/touch pad (6).

EQUIPMENT ALERT
Ensure that switch valve plunger (A) is in place before performing the following step.

(3) Install master switch (4); then position front cover (3) and secure with six screws (1) and two screws (2).

(4) Turn air manual shut-off valve *[in junction box]* ON, connect electrical power to operatory, and check for proper operation.

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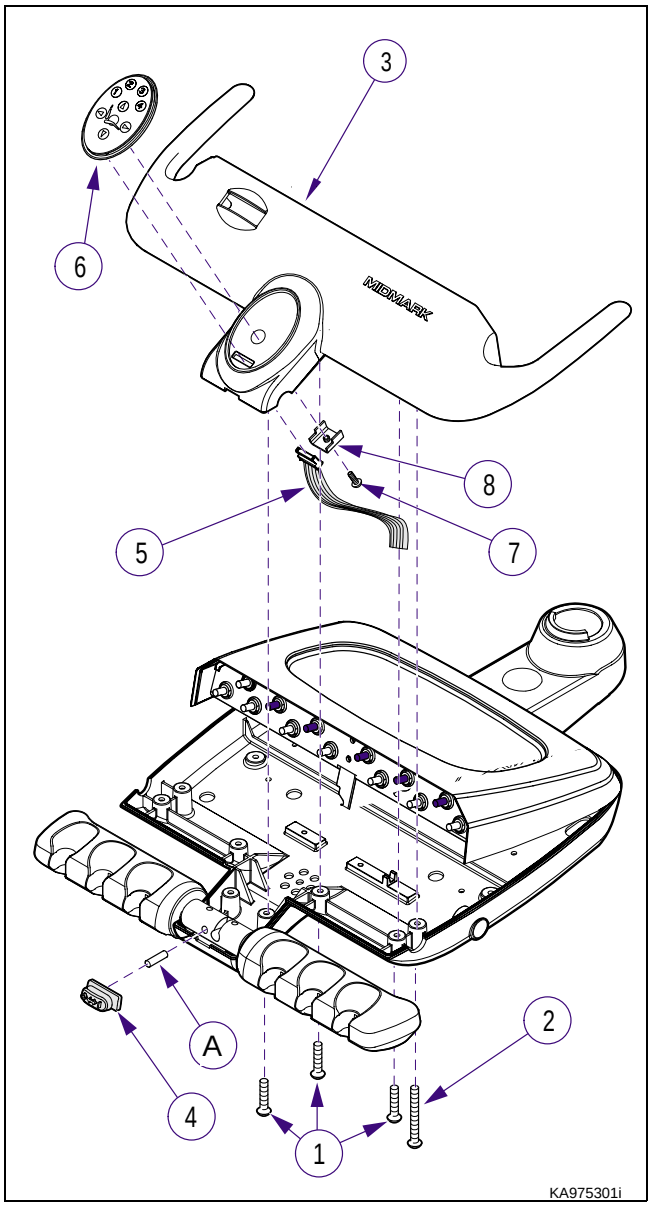

Figure 4-22. Chair Control Touch Pad Removal / Installation *(Chair Mtd. ProCenter Units)*

4.23 Chair Control Touch Pad Removal / Installation

(12:00 Casework Mtd ProCenter Units)

A. Removal

(1) Disconnect all electrical power to unit.

(2) Remove four screws (1, Figure 23) and bottom cover (2).

(3) Disconnect wire harness (3) from touch pad (4).

(4) Remove screw (5), bracket (6), and touch pad (4).

B. Installation

(1) Install touch pad (4) and secure with bracket (6) and screw (5).

(2) Conect wire harness (3) to touch pad (4).

(3) Install bottom cover (2) and secure with four screws (1).

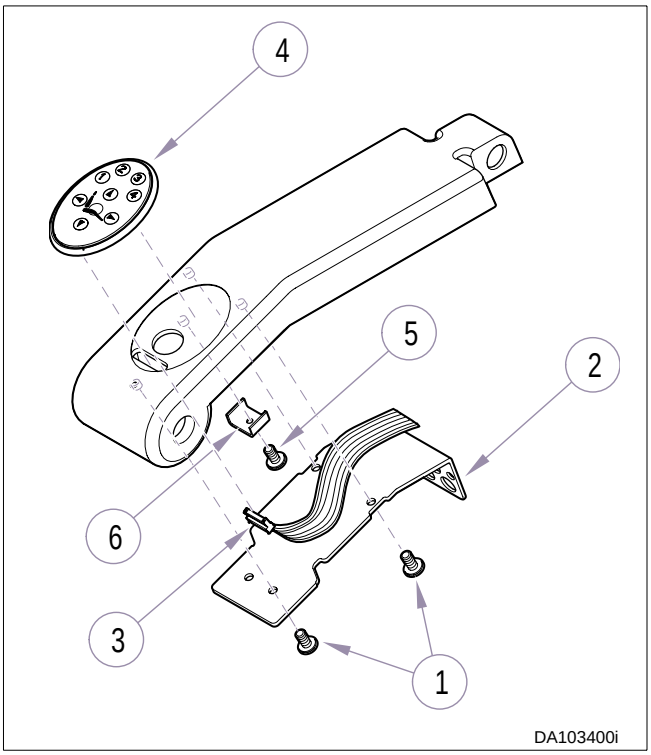

Figure 4-23. Chair Control Touch Pad Removal / Installation *(12:00 Mtd. ProCenter Units)*

Cuspidor

4.24 Cuspidor Bowl Removal / Installation

A. Removal

(1) Turn master ON/OFF switch *[on delivery unit]* to OFF position.

NOTE
To prevent residual water spilling, place finger over end of spouts when removing.

(2) Remove cup fill spout (1, Figure 4-24), cup fill gasket (2), bowl flush spout (3), bowl flush gasket (4), and gold trap (5).

NOTE
Cuspidor bowl is pressure-fit. There is no hardware to remove.

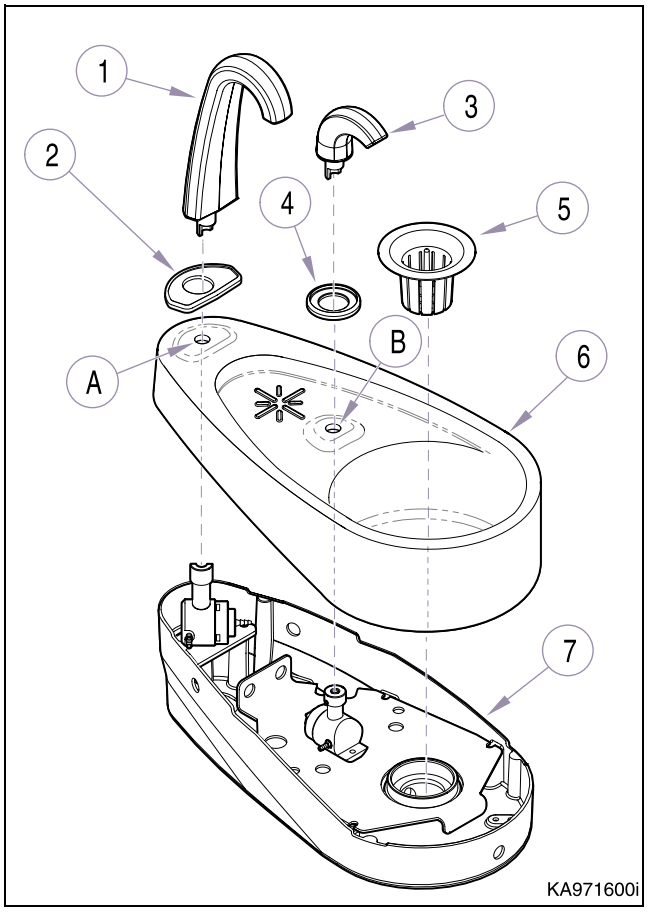

Figure 4-24. Cuspidor Bowl

(3) Remove cuspidor bowl (6).

B. Installation

(1) Position cuspidor bowl (6) over bottom housing (7) and gently press downward.

(2) Install cup fill gasket (2) onto cup fill spout (1); then insert cup fill spout into hole (A).

(3) Install bowl flush gasket (4) onto bowl flush spout (3); then insert bowl flush spout into hole (B).

(4) Install gold trap (5).

(5) Turn master ON/OFF switch ON and check for proper operation.

4.25 Typical Push Button Valve Removal / Installation

A. Removal

NOTE
Figure 4-25 shows the bowl flush button valve. The procedure for the cup fill button valves is similar.

(1) Remove cuspidor bowl. Refer to para 4.24.

(2) Tag and disconnect all tubing connected to push button valve (1, Figure 4-25).

(3) Remove barbed fitting (2) and gasket (3) from push button valve (1).

(4) Loosen set screw (4) and remove knob (5).

(5) Unscrew push button valve (1); then remove valve, washer (6), and trim ring (7) from bottom housing (8).

B. Installation

(1) Insert push button valve (1) thru washer (6), and bottom housing (8).

(2) Secure push button valve (1) with trim ring (7).

(3) Install knob (5) and tighten set screw (4).

(4) Install gasket (3) and barbed fitting (2) onto push button valve (1).

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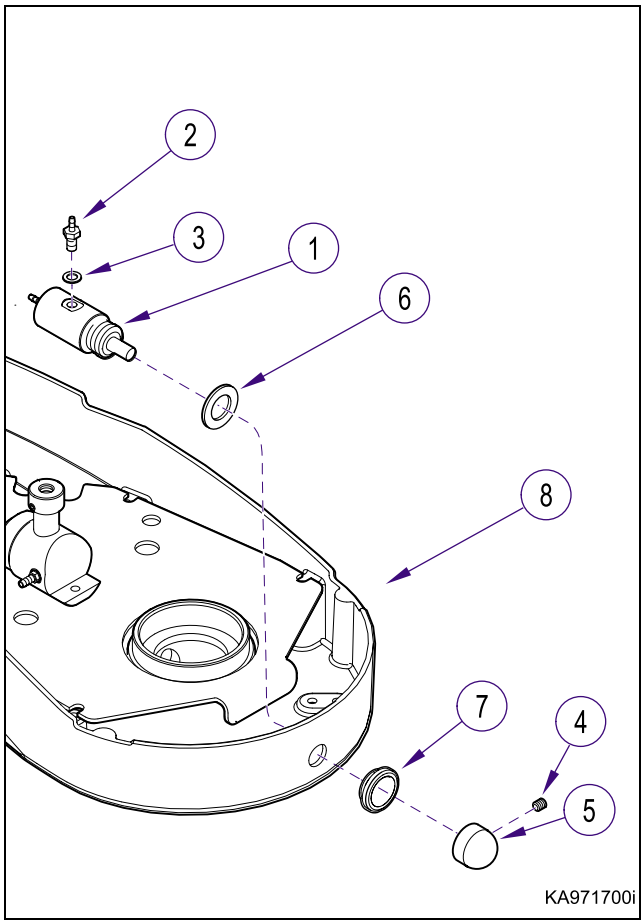

Figure 4-25. Typical Push Button Valve

(5) Connect all tubing to proper fittings of push button valve (1).

(6) Install cuspidor bowl. Refer to para 4.24.

4.26 Cup Fill Water Valve Removal / Installation

A. Removal

(1) Remove cuspidor bowl. Refer to para 4.24.

(2) Tag and disconnect 1/4 in. blue tubing and 1/8 in. red tubing from cup fill water valve (1, Figure 4-26).

(3) Remove two screws (2) and valve bracket (3).

(4) Remove screw (4), washer (5), and cup fill water valve (1) from valve bracket (3).

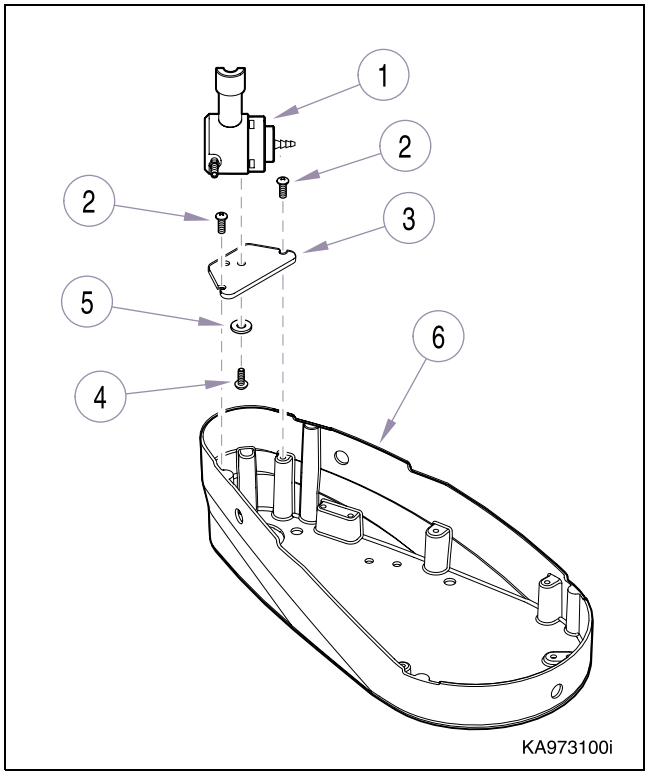

Figure 4-26. Cup Fill Water Valve

B. Installation

(1) Secure cup fill water valve (1) to valve bracket (3) with screw (4) and washer (5).

(2) Install valve bracket (3) into bottom housing (6) and secure with two screws (2).

(3) Connect 1/4 in. blue tubing and 1/8 in. red tubing to proper fittings of cup fill water valve (1).

(4) Install cuspidor bowl. Refer to para 4.24.

4.27 Bowl Flush Water Valve Removal / Installation

A. Removal

(1) Remove cuspidor bowl. Refer to para 4.24.

(2) Tag and disconnect 1/4 in. blue tubing and 1/8 in. red tubing from bowl flush water valve (1, Figure 4-27).

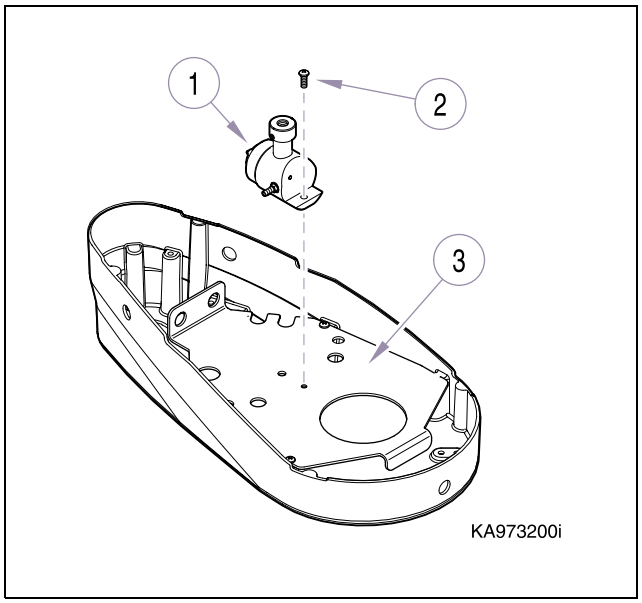

Figure 4-27. Bowl Flush Water Valve

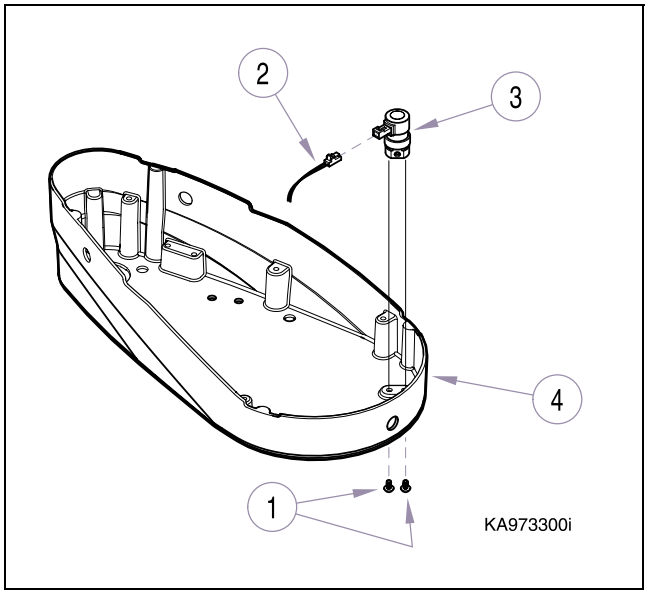

Figure 4-28. Bowl Flush Solenoid

(3) Remove screw (2) and bowl flush water valve (1).

B. Installation

(1) Secure bowl flush water valve (1) to bottom housing (3) with screw (2).

(2) Connect 1/4 in. blue tubing and 1/8 in. red tubing to proper fittings of bowl flush water valve (1).

(3) Install cuspidor bowl. Refer to para 4.24.

4.28 Bowl Flush Solenoid Removal / Installation

A. Removal

(1) Remove cuspidor bowl. Refer to para 4.24.

(2) Remove two screws (1, Figure 4-28).

(3) Disconnect electrical lead (2) from solenoid (3).

(4) Tag and disconnect 1/8 in. yellow tubing and 1/8 in. red tubing from solenoid (3); then remove solenoid.

B. Installation

(1) Connect 1/8 in. yellow tubing and 1/8 in. red tubing proper fittings of solenoid (3).

(2) Connect electrical lead (2) to solenoid (3).

(3) Install solenoid (3) and secure to bottom housing (4) with two screws (1).

(4) Install cuspidor bowl. Refer to para 4.24.

4.29 Cup Fill / Bowl Flush Timing Valve Adjustment / Removal / Installation

A. Adjustment *(Refer to Figure 4-29)*

(1) To *increase* the length of time the bowl flush/ cup fill water runs, insert a screwdriver thru proper hole in bottom housing; then turn valve adjuster *counterclockwise*.

(2) To *decrease* the length of time the bowl flush/ cup fill water runs, insert a screwdriver thru proper hole in bottom housing; then turn valve adjuster *clockwise*.

B. Removal

(1) Remove cuspidor bowl. Refer to para 4.24.

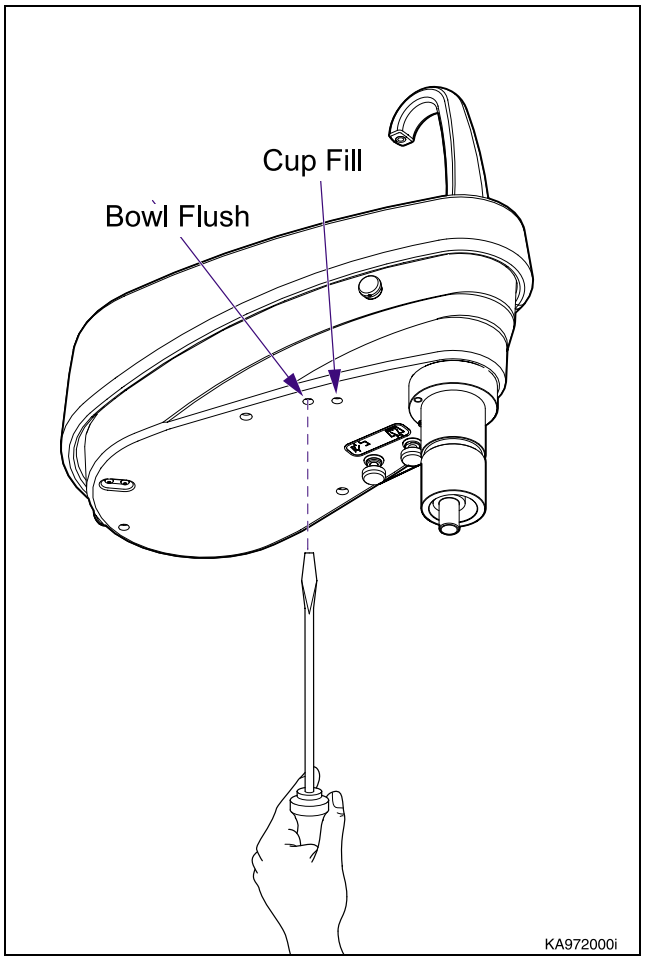

Figure 4-29. Timing Valve Adjustment

(2) Remove four screws (1, Figure 4-30); then partially separate mounting plate (2) from bottom housing (3).

(3) Tag and disconnect tubing connected to timing adjustment valve (4).

(4) Unscrew timing adjustment valve (4); then remove valve, nut (5), washer (6), and trim ring (7) from mounting plate (2).

(5) Remove set screw (8) and valve adjuster (9) from timing adjustment valve (4).

C. Installation

(1) Install valve adjuster (9) onto timing adjustment valve (4) and secure with set screw (8).

(2) Secure timing adjustment valve (4) to mounting plate (2) with nut (5), washer (6), and trim ring (7).

(3) Connect tubing to proper fitting of timing adjustment valve (4).

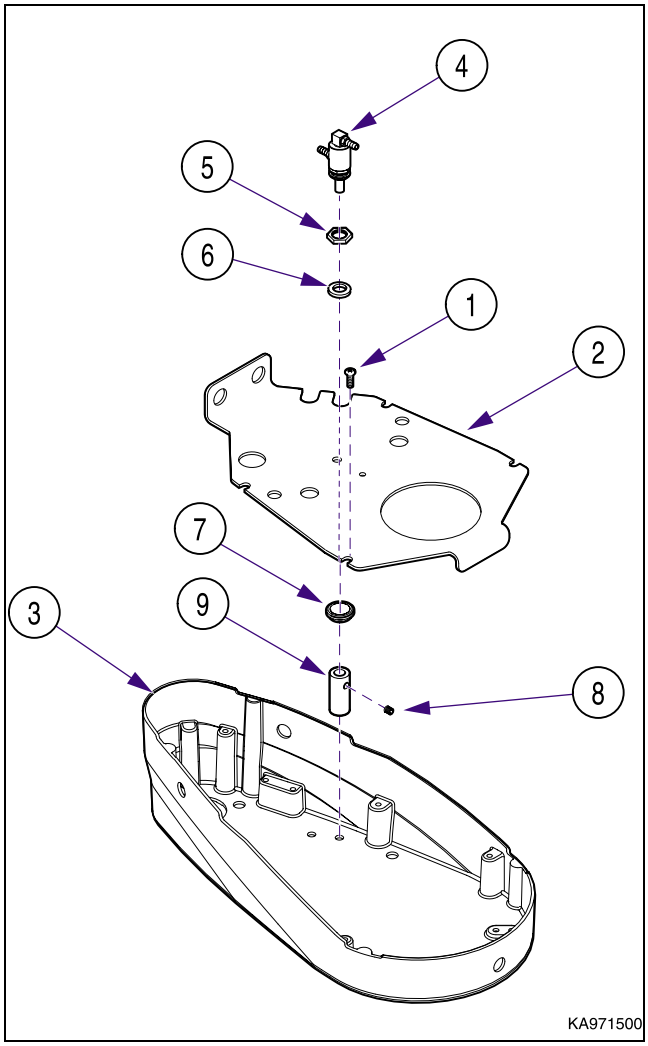

Figure 4-30. Cup Fill / Bowl Flush Timing Valve

(4) Position mounting plate (2) and secure to bottom housing (3) with four screws (1).

(5) Install cuspidor bowl. Refer to para 4.24.

4.30 Cup Fill (Primary / Pilot) Air Valve Removal / Installation

A. Removal

NOTE
The **pilot** air valve has *2-Way* sticker on valve. The **primary** air valve has *3-Way* sticker on valve.

(1) Remove cuspidor bowl. Refer to para 4.24.

(2) Tag and disconnect all tubing from valve assembly (1, Figure 4-31).

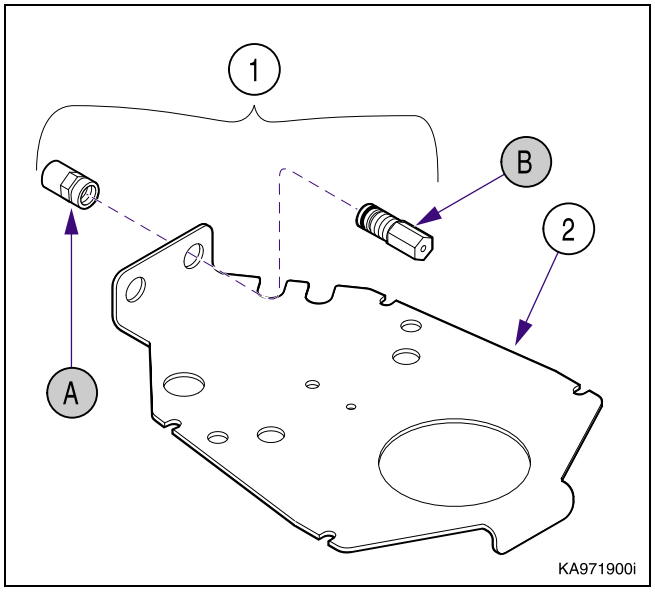

Figure 4-31. Cup Filler *(Primary / Pilot)* Air Valve

(3) Remove valve cap (A) from valve body (B); then remove valve body from mounting plate (2).

B. Installation

(1) Insert valve body (B) thru mounting plate (2); then install valve cap (A) to secure in place.

(2) Connect all tubing to proper fittings of valve assembly (1).

(3) Install cuspidor bowl. Refer to para 4.24.

4.31 Cuspidor Limit Switch Removal / Installation

A. Removal

(1) Remove cuspidor bowl. Refer to para 4.24.

(2) Remove four screws (1, Figure 4-32); then partially separate mounting plate (2) from bottom housing (3).

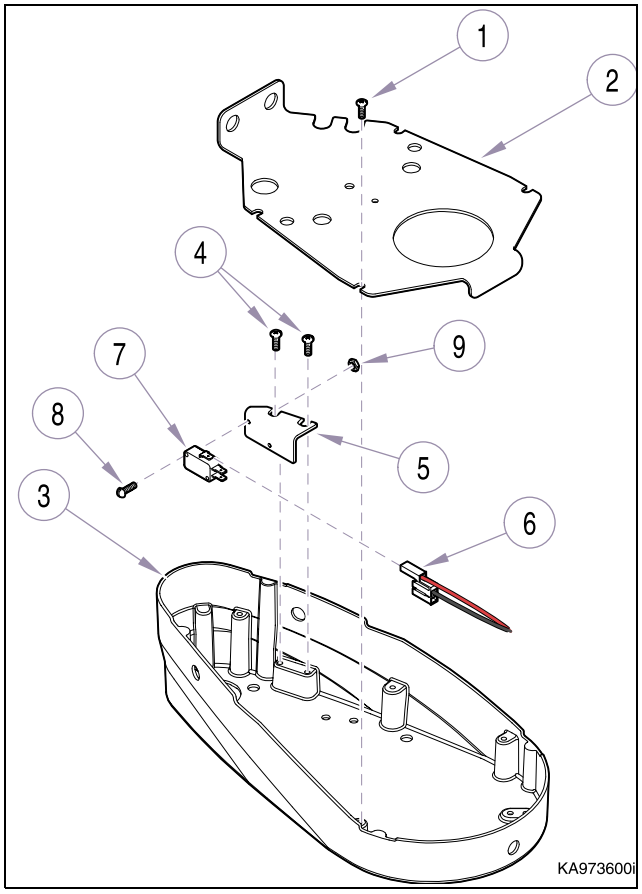

Figure 4-32. Cuspidor Limit Switch

(3) Remove two screws (4) and switch bracket (5).

(4) Disconnect wiring harness (6) from limit switch (7).

(5) Remove two screws (8), two nuts (9), and limit switch (7).

B. Installation

(1) Secure limit switch (7) to switch bracket (5) with two screws (8) and two nuts (9).

(2) Connect wiring harness (6) to terminals of limit switch (7). ***Note:*** *The black wire must connect to the terminal marked COM, and the red wire must connect to the terminal marked NO.*

(3) Secure switch bracket (5) to bottom housing (3) with two screws (4).

(4) Position mounting plate (2) and secure to bottom housing (3) with four screws (1).

(5) Install cuspidor bowl. Refer to para 4.24.

Assistant's Instrument Unit

4.32 Syringe Button Valve Removal / Installation

A. Removal

(1) Turn master ON/OFF switch *[on delivery unit]* to OFF position.

(2) Gently tap roll pin (1, Figure 4-33) out of syringe body (2) until malfunctioning button valve (3) is released.

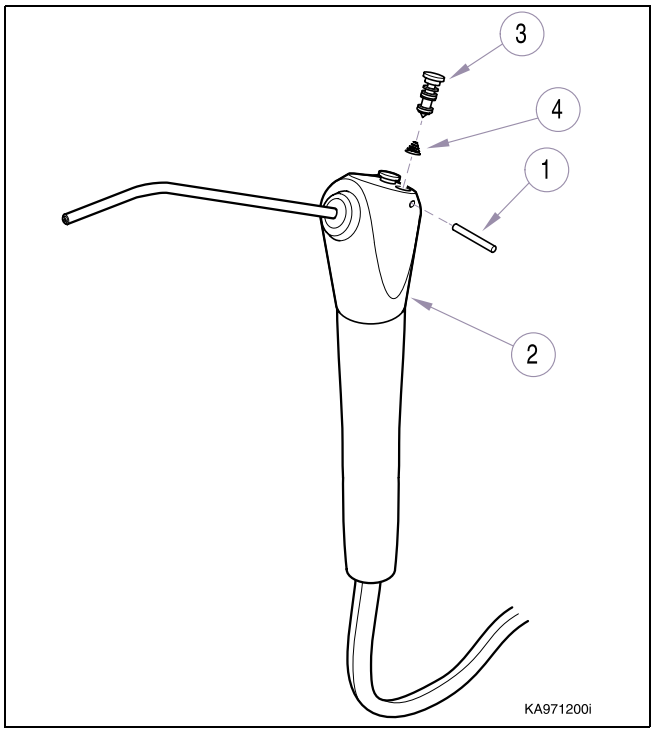

Figure 4-33. Syringe Button Valve

(3) Remove button valve (3) and spring (4).

B. Installation

NOTE
Align hole in button valve with roll pin when installing.

(1) Install spring (4) and button valve (3) into syringe body (2); then gently tap roll pin (1) thru button valve.

(2) Turn master ON/OFF switch ON and check for proper operation.

4.33 Chair Control Touch Pad Removal / Installation

A. Removal

(1) Disconnect all electrical power to operatory.

(2) Turn master ON/OFF switch *[on delivery unit]* to OFF position.

(3) Remove solids collector cover (1, Figure 4-34) and screw (2).

(4) Remove four screws (3) and partially separate top cover (4) from bottom housing (5).

(5) Disconnect wire harness (6) from bevel/touch pad (7); then remove top cover (4).

(6) Remove screw (8), bracket (9), and bevel/touch pad (7) from top cover (4).

B. Installation

(1) Secure bevel/touch pad (7) to top cover (4) with bracket (9), and screw (8).

(2) Connect wire harness (6) to bevel/touch pad (7).

(3) Install top cover (4) and secure to bottom housing (5) with four screws (3).

(4) Install screw (2) and solids collector cover (1).

(5) Turn master ON/OFF switch *[on delivery unit]* ON, connect electrical power to operatory, and check for proper operation.

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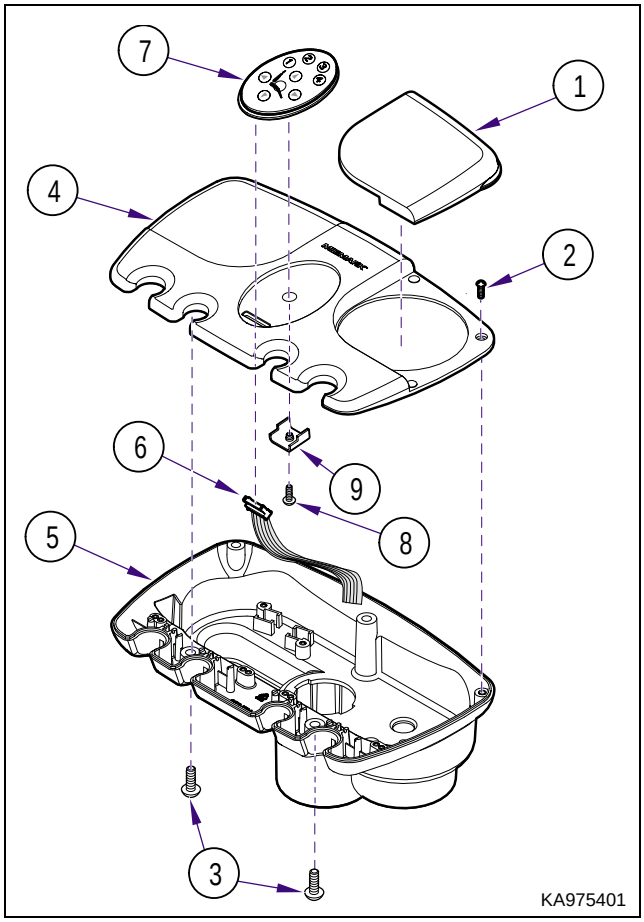

Figure 4-34. Chair Optional Touch Pad

4.34 Water Quick Connect Valve Removal / Installation

A. Removal

(1) Turn master ON/OFF switch *[on delivery unit]* to OFF position.

(2) Remove solids collector cover (1, Figure 4-35) and screw (2).

(3) Remove four screws (3) and top cover (4) from bottom housing (5).

(4) Unscrew compression nut (6) and disconnect 1/4 in. blue tubing (7) from valve (8); then remove coupler (9) from tubing.

(5) Remove nut (10) and valve (8) from bottom housing (5).

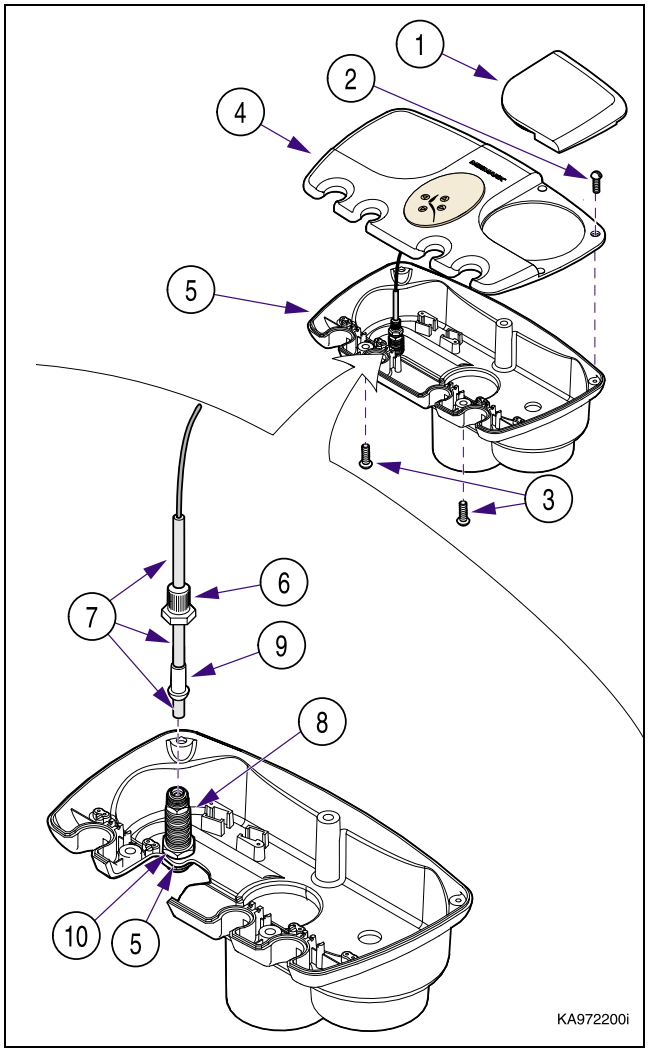

Figure 4-35. Water Quick Connect Valve

B. Installation

(1) Insert valve (8) thru hole in bottom housing (5); then secure with nut (10).

(2) Install compression nut (6) and coupler (9) onto 1/4 in. blue tubing (7); then connect tubing to valve (8).

(3) Tighten compression nut (6).

(4) Install top cover (4) and secure to bottom housing (5) with four screws (3).

(5) Install screw (2) and solids collector cover (1).

(6) Turn master ON/OFF switch *[on delivery unit]* ON and check for proper operation.

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Flex Arm

4.35 Flex Arm Cover Removal / Installation

A. Removal

(1) Remove two screws (1, Figure 4-36) and two end caps (2).

(2) Remove flex arm cover (3) and bottom cover (4) from flex arm (5).

B. Installation

(1) Hold bottom cover (4) in place, then slide flex arm cover (3) over flex arm (5).

(2) Install two end caps (2) and secure with two screws (1).

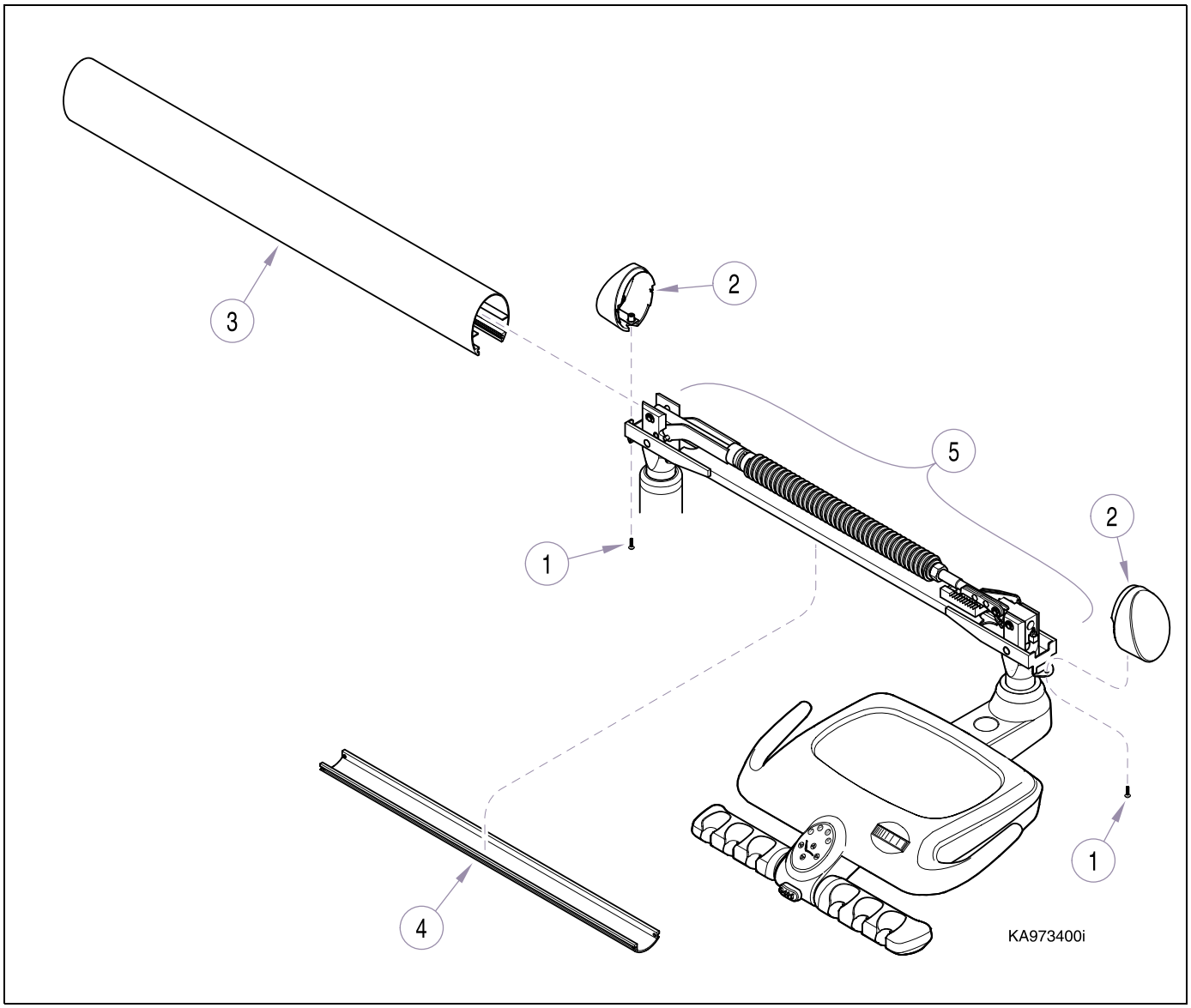

Figure 4-36. Flex Arm Cover

4.36 Flex Arm Spring Tension Adjustment

A. Adjustment

(1) Remove flex arm cover. Refer to para 4.35.

(2) Adjust tension nut (1, Figure 4-37) to increase or decrease spring tension.

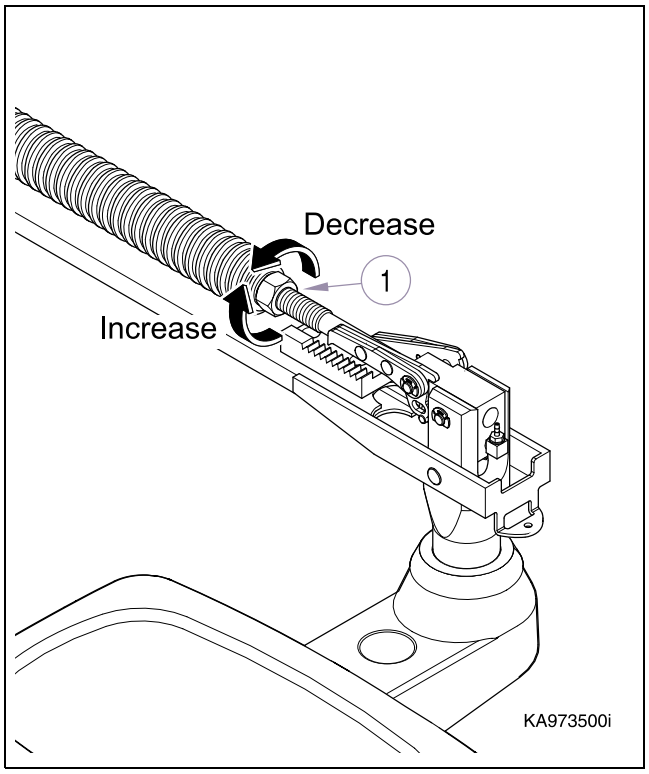

Figure 4-37. Flex Arm Spring Tension Adjustment

(3) Raise and lower flex arm; then move flex arm to horizontal position and observe. Flex arm should be easy to move, yet not drift downward when released. Repeat step 2 as necessary.

(4) Install flex arm cover. Refer to para 4.35.

4.37 Lock Pawl Removal / Installation

A. Removal

(1) Remove flex arm cover. Refer to para 4.35.

CAUTION
The delivery unit will drop when clevis pin is removed in the following step. Use an assistant to hold the delivery unit, or place support under delivery unit prior to removing clevis pin. Failure to do so could result in personal injury or damage to delivery unit.

(2) Remove retaining ring (1, Figure 4-38); then *(while supporting delivery unit)* remove clevis pin (2) and two lock pawls (3) from cylinder block assembly (4).

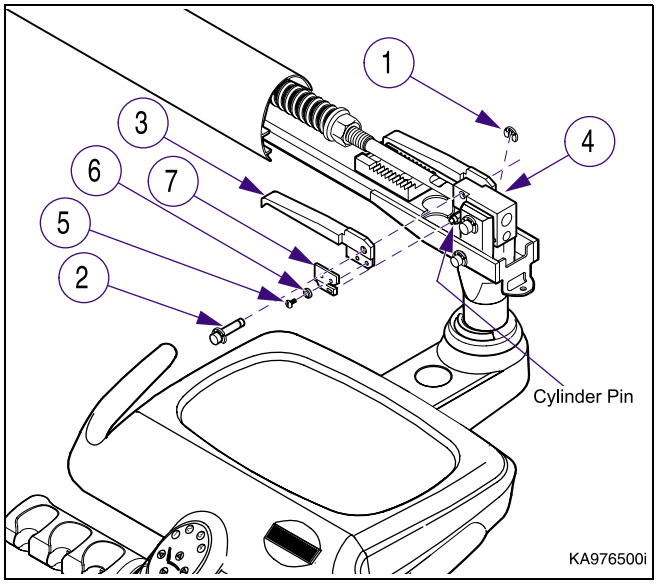

Figure 4-38. Lock Pawl

(3) Remove two screws (5), two washers (6), and pivot bracket (7) from damaged lock pawl (3).

B. Installation

(1) Secure pivot bracket (7) to lock pawl (3) with two washers (6) and two screws (5).

NOTE
Be sure slotted holes in pivot brackets (7) are positioned over the ends of cylinder pin.

(2) Insert clevis pin (2) thru one lock pawl (3), cylinder block (4), and other lock pawl (3); then secure clevis pin with retaining ring (1).

(3) Install flex arm cover. Refer to para 4.35.

4.38 Lock Cylinder Removal / Installation

A. Removal

(1) Remove flex arm cover. Refer to para 4.35.

(2) Remove lock pawls. Refer to para 4.37.

EQUIPMENT ALERT
The 1/8 in. brown tubing has a short section of wire inserted to prevent kinking. Retain wire for installation.

(3) Disconnect 1/8 in. brown tubing from fitting (1, Figure 4-39).

(4) Remove fitting (1) and gasket (2) from cylinder block assembly (3).

(5) Loosen set screw (4); then remove lock cylinder (5) from cylinder block assembly (3).

(6) Remove cylinder pin (6) from lock cylinder (5).

B. Installation

EQUIPMENT ALERT
Thread cylinder pin onto lock cylinder so that only 1-2 threads are exposed at the end of the plunger.

(1) Install cylinder pin (6) onto lock cylinder (5).

(2) Insert lock cylinder (5) into cylinder block assembly (3) until end of cylinder is flush with block; then tighten set screw (4).

(3) Install fitting (1) and gasket (2) into lock cylinder (4).

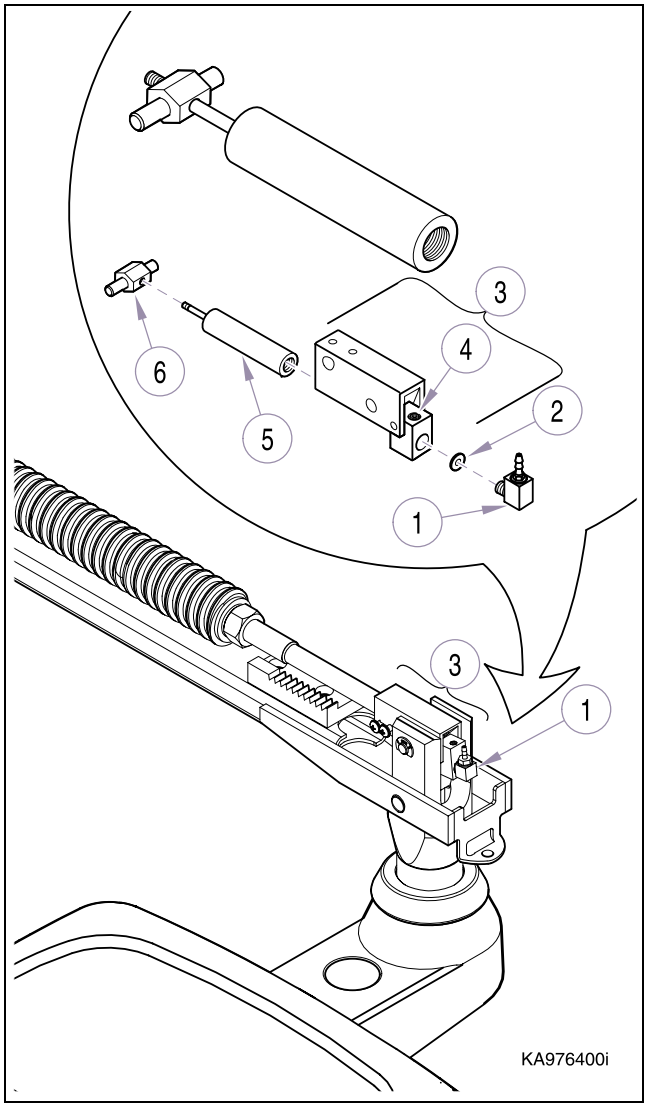

Figure 4-39. Lock Cylinder

EQUIPMENT ALERT
Be sure the short section of wire is installed in 1/8 in. brown tubing before connecting to fitting (1). Failure to do so could allow tubing to kink, preventing proper operation.

(4) Connect 1/8 in. brown tubing to fitting (1).

(5) Install lock pawls. Refer to para 4.37.

(6) Install flex arm cover. Refer to para 4.35.

Alternative Handpiece Installation

4.39 Lares® Handpiece Tubing Installation

A. Removal of Existing Handpiece Tubing

(1) Disconnect three handpiece tubes (1, Figure 4-40) from kink valve (2).

(2) Disconnect 1/8” green tube (3) from kink valve (2).

(3) Disconnect two pieces of 1/8” green tubing (4) from 1/8” green tube (3); then insert straight barb fitting (5).

(4) Disconnect two pieces of 1/8” clear tubing (6) from 1/8” clear tube (7); then insert straight barb fitting (8).

NOTE
If removing 3-port tubing, the following Removal step is not necessary. Go to Installation procedure.

(5) Disconnect handpiece tube (9) from 1/4” clear exhaust tube (10).

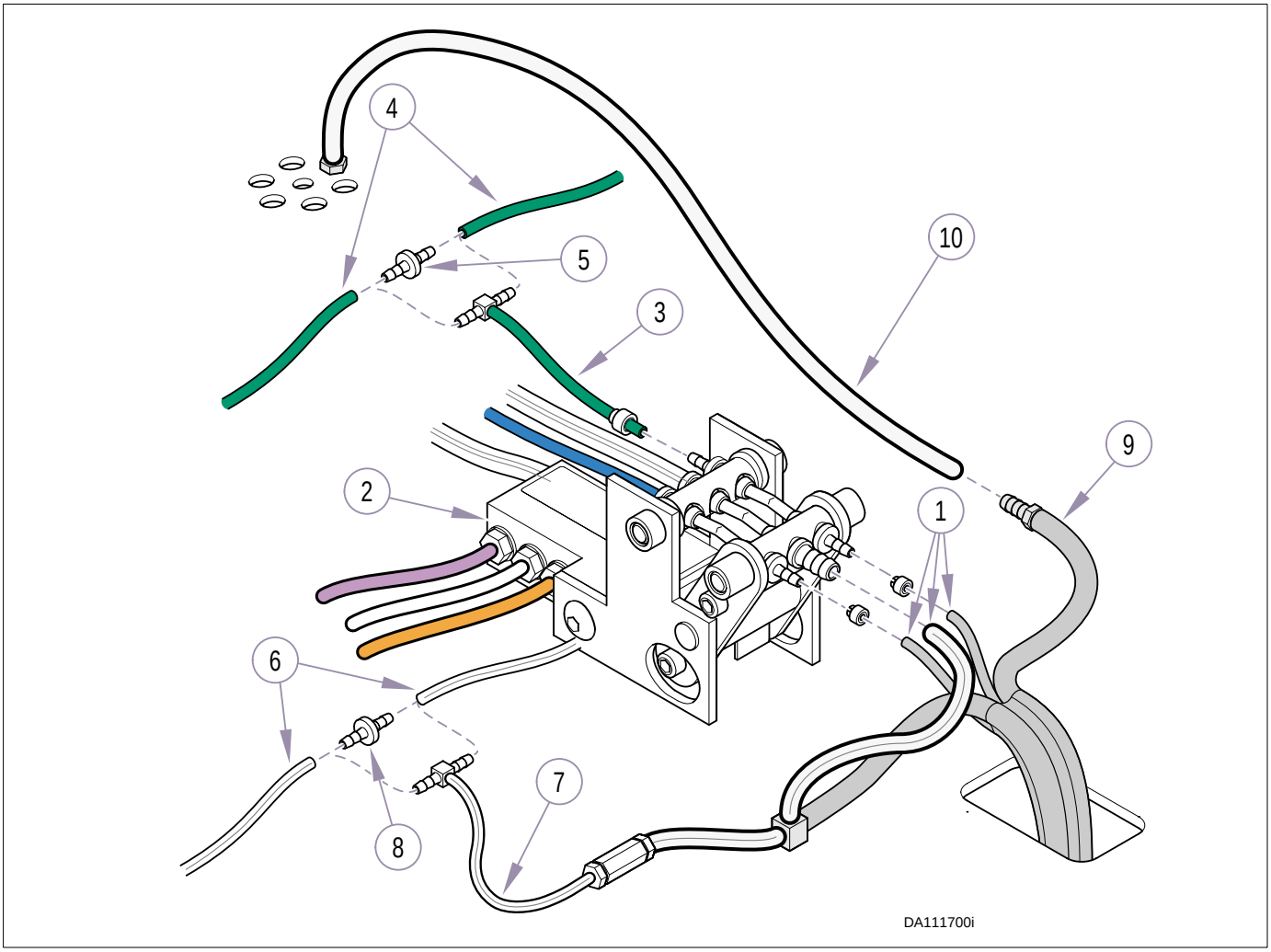

Figure 4-40. Removal of Existing Handpiece Tubing

B. Installation of Lares® Handpiece Tubing

(1) Route Lares®tubing (1, Figure 4-41) up thru hole in delivery unit; then connect 1/4" clear tube (2) to kink valve (3) as shown.

(2) Install uni-clamp (4) onto 1/8" blue tube (5) and connect to kink valve (3) as shown.

(3) Install a 1/8" to 1/4" barb fitting (6) into 1/8" clear tube (7); then connect to 1/4" clear exhaust tube (8).

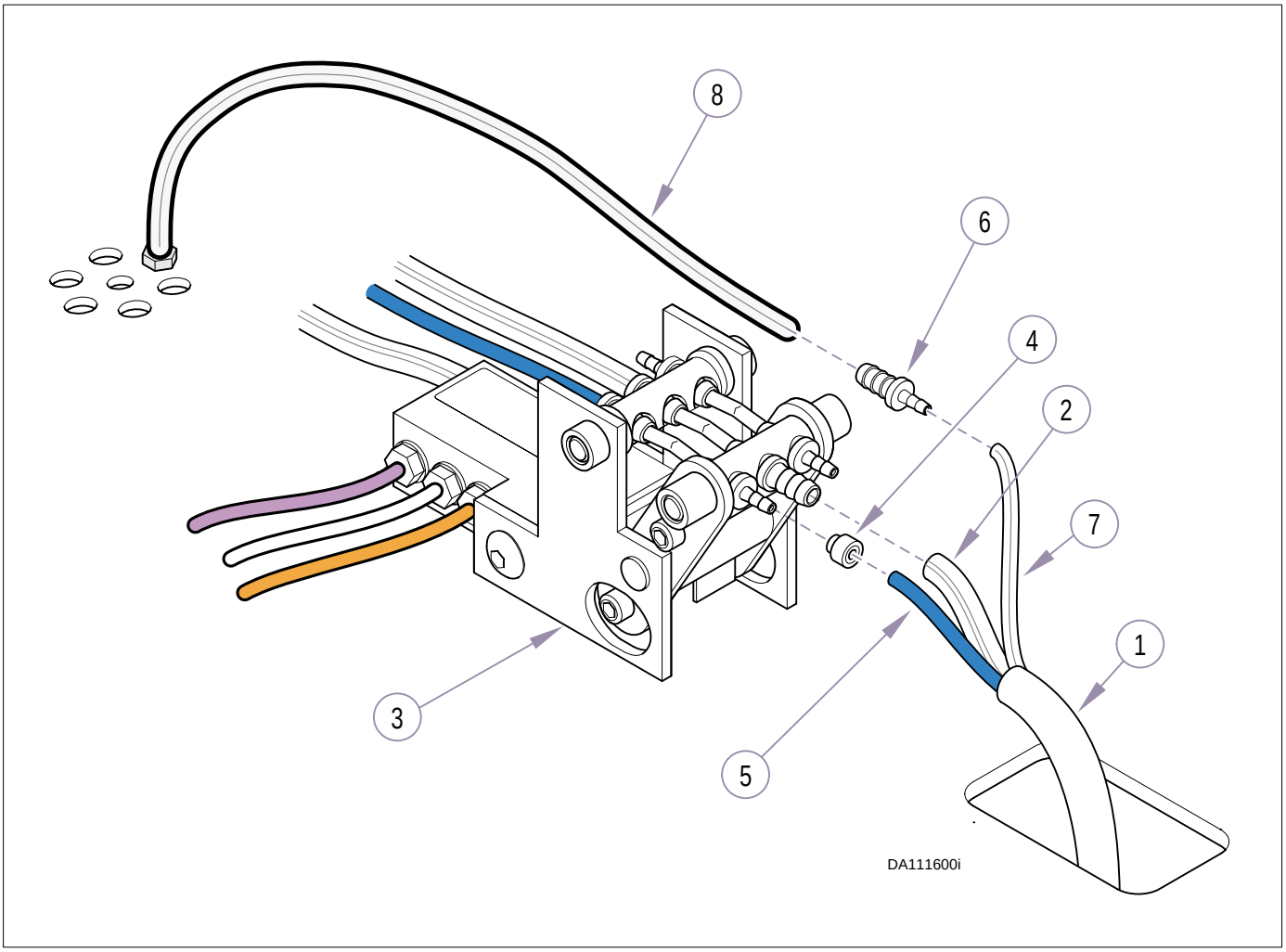

Figure 4-41. Lares® Handpiece Tubing Installation

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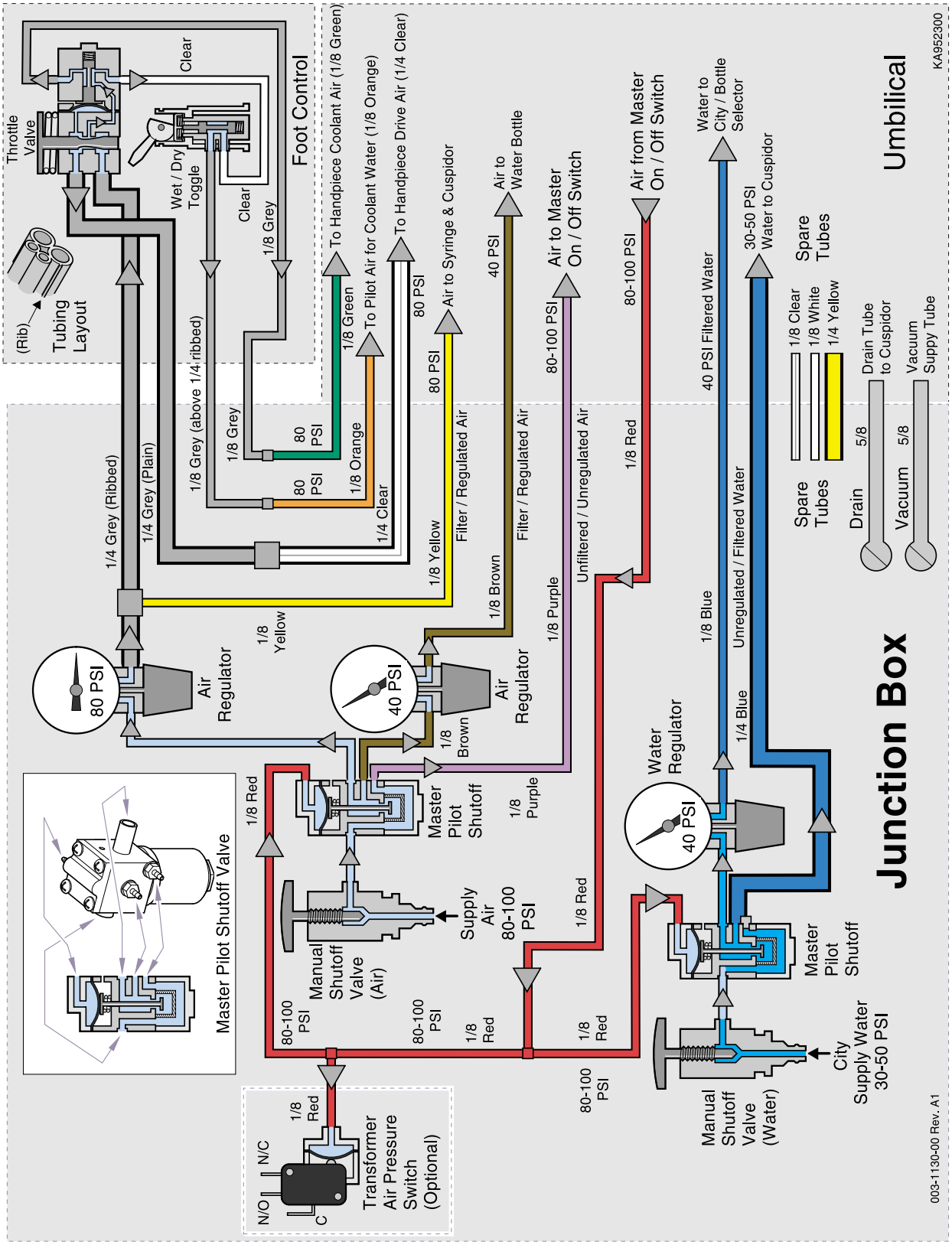
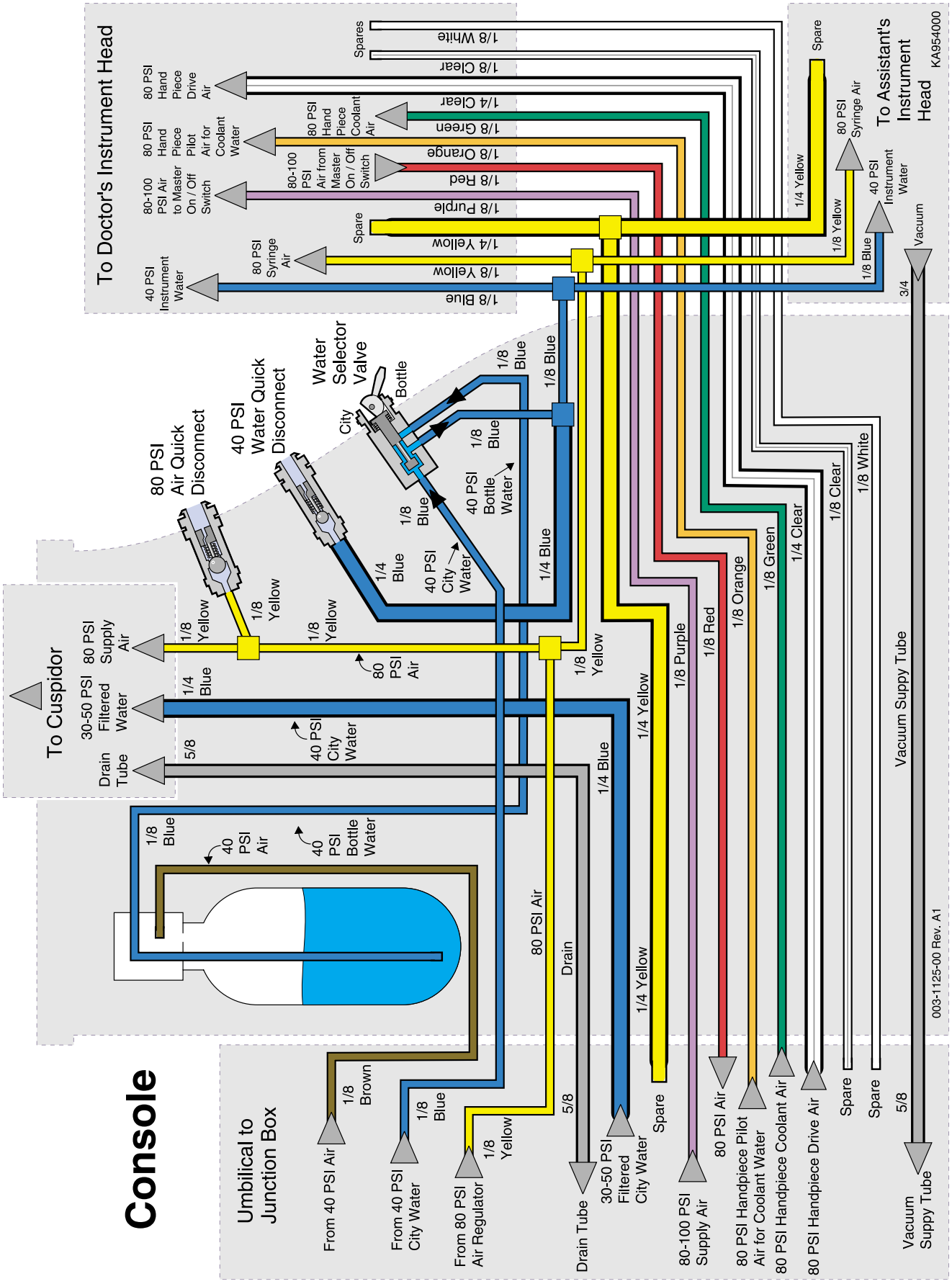
SECTION V
SCHEMATICS AND DIAGRAMS

5.1 Tubing Diagrams



SECTION V
SCHEMATICS AND DIAGRAMS



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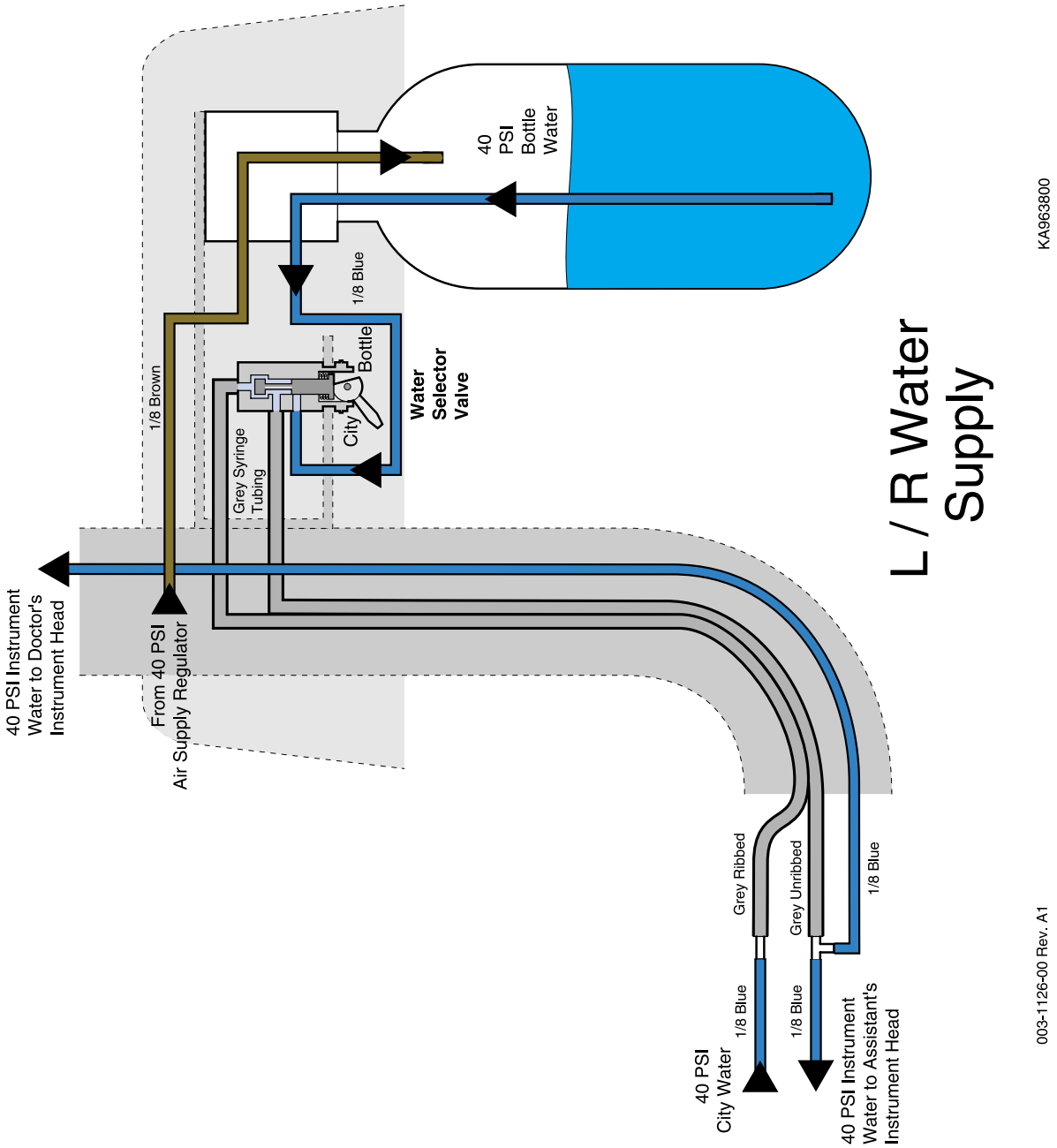
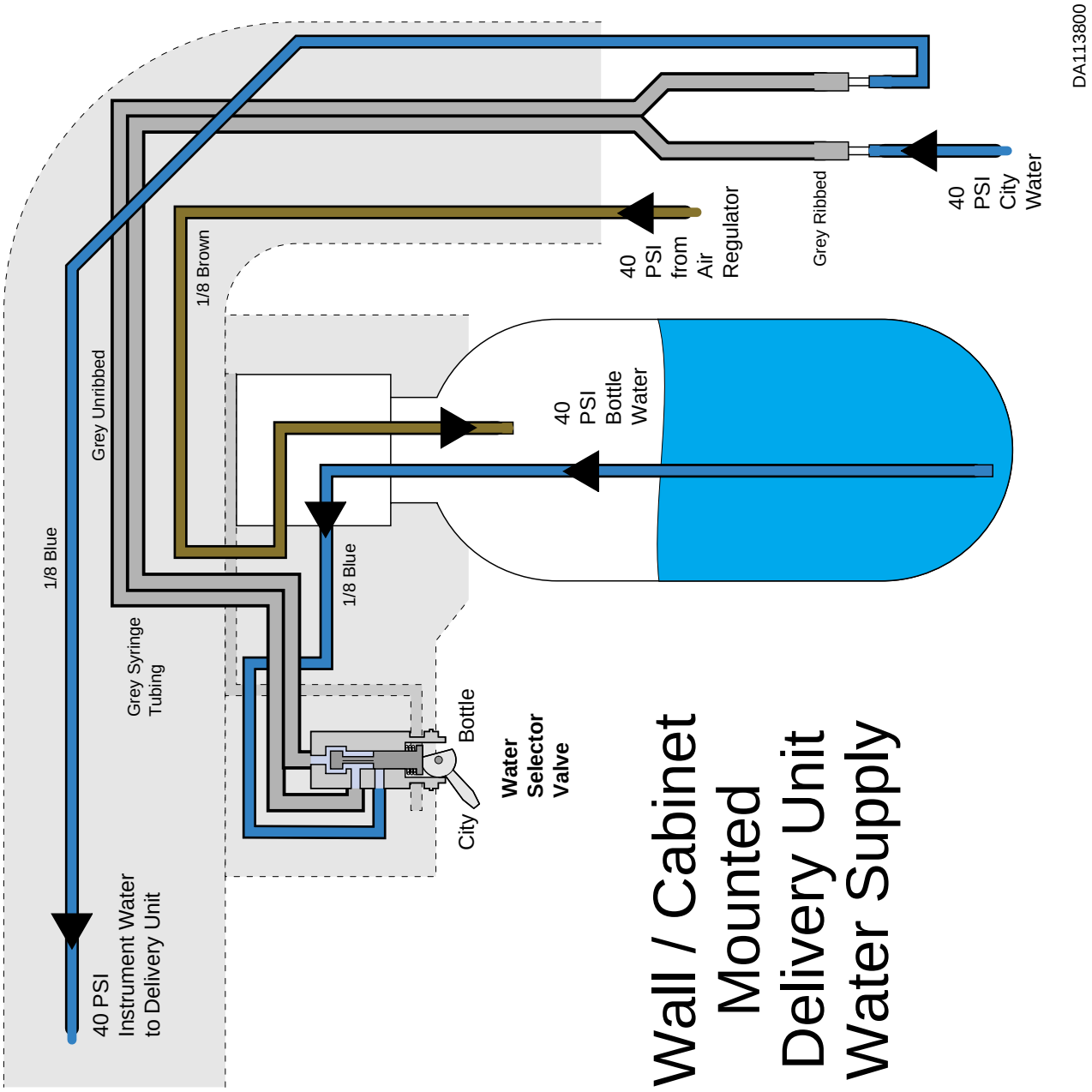

L / R Water Supply
KA963800
003-1126-00 Rev. A1
40 PSI Instrument Water to Doctor's Instrument Head
From 40 PSI Air Supply Regulator
1/8 Brown
Grey Syringe Tubing
City
Bottle
Water Selector Valve
1/8 Blue
40 PSI Bottle Water
Grey Ribbed
Grey Unribbed
1/8 Blue
1/8 Blue
1/8 Blue
40 PSI City Water
40 PSI Instrument Water to Assistant's Instrument Head

SECTION V
SCHEMATICS AND DIAGRAMS



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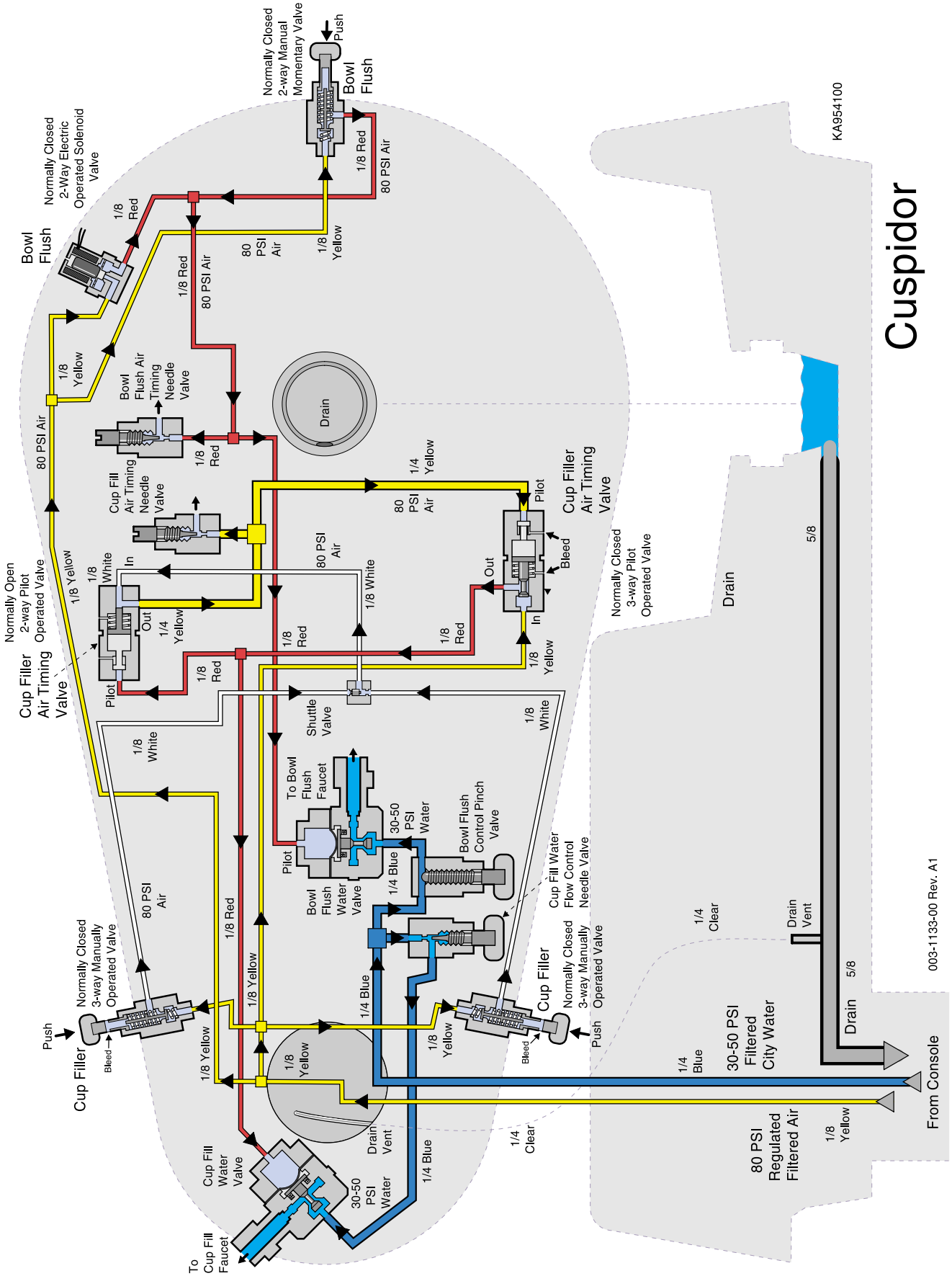

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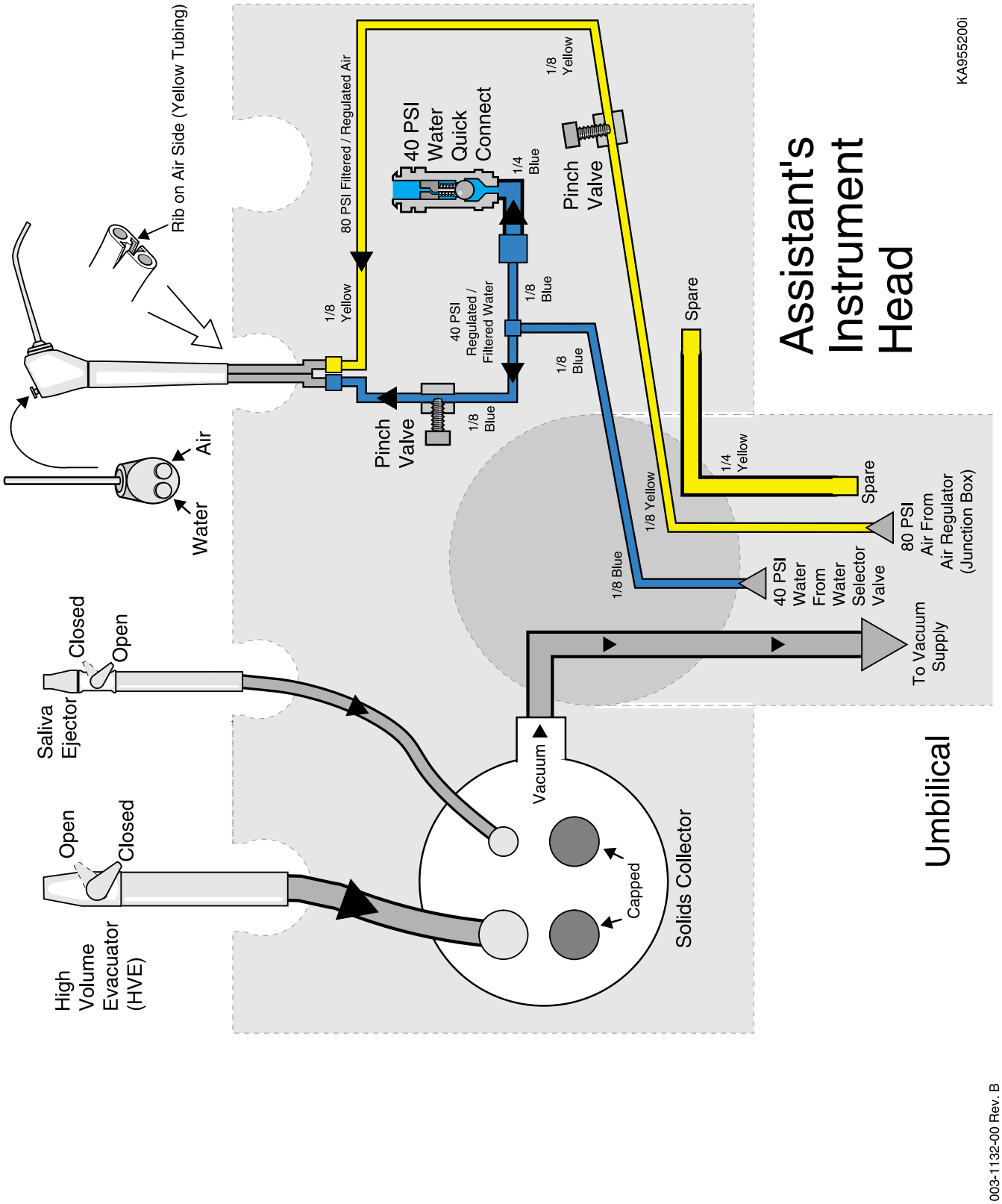
SCHEMATICS AND DIAGRAMS



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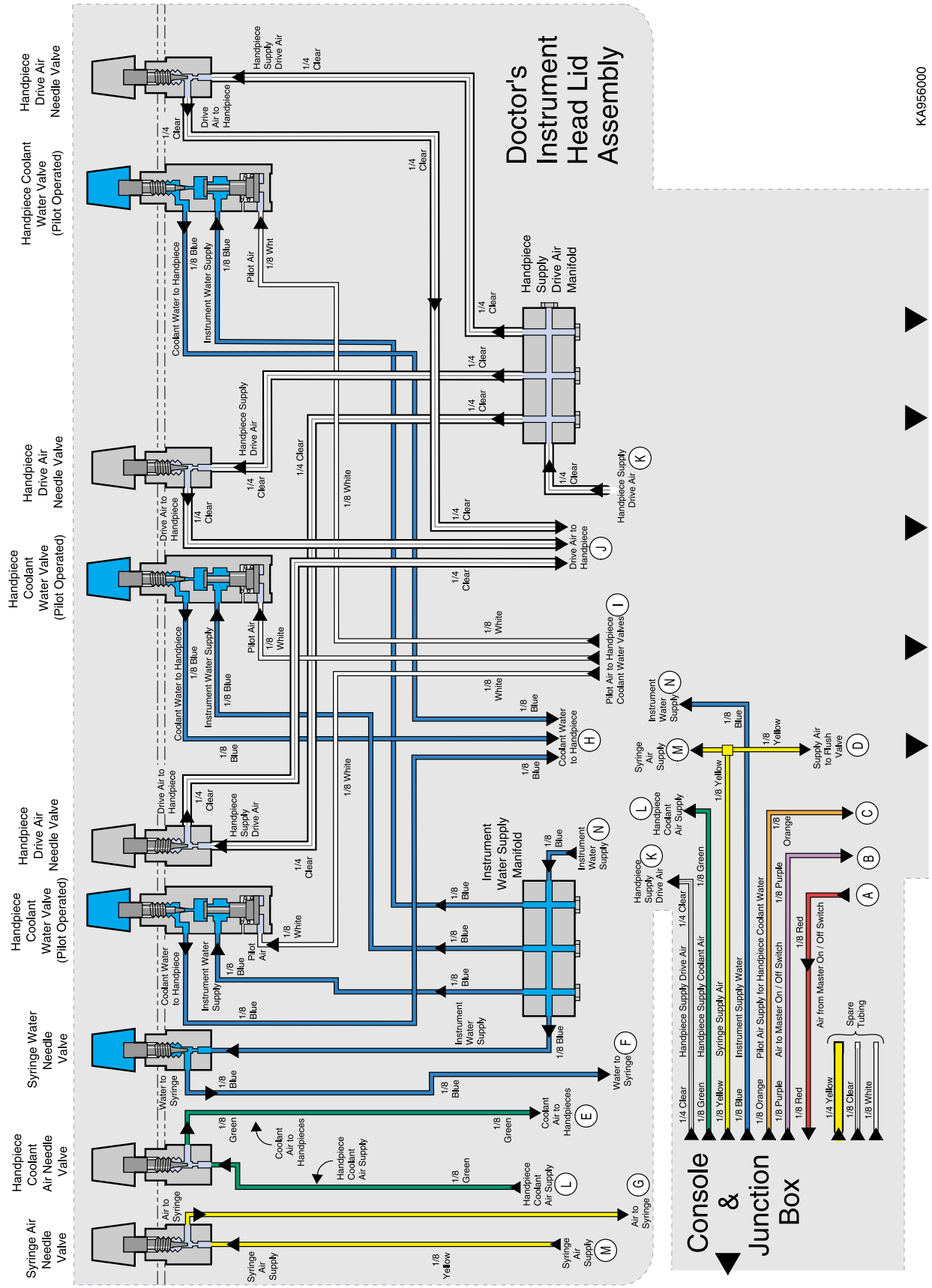
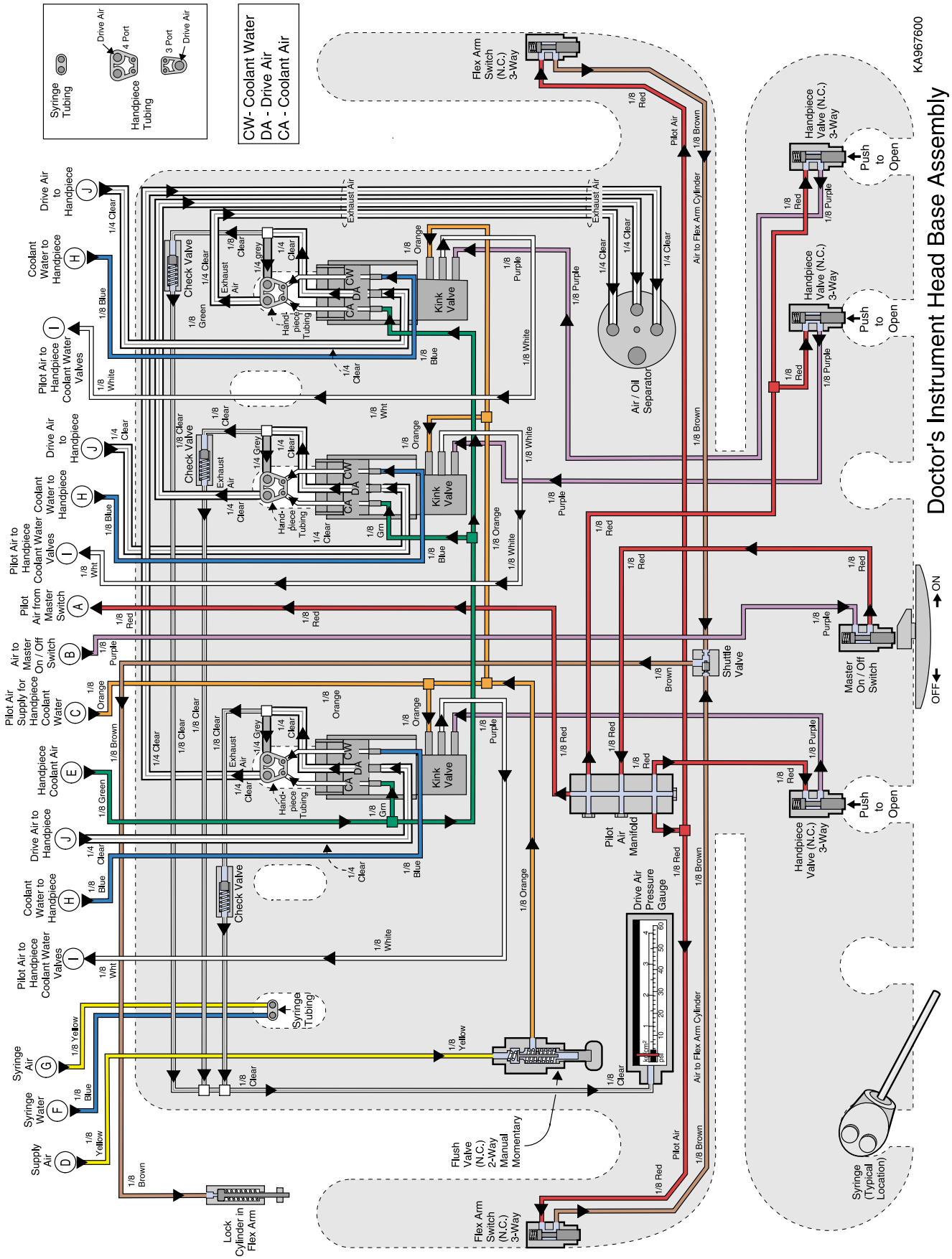
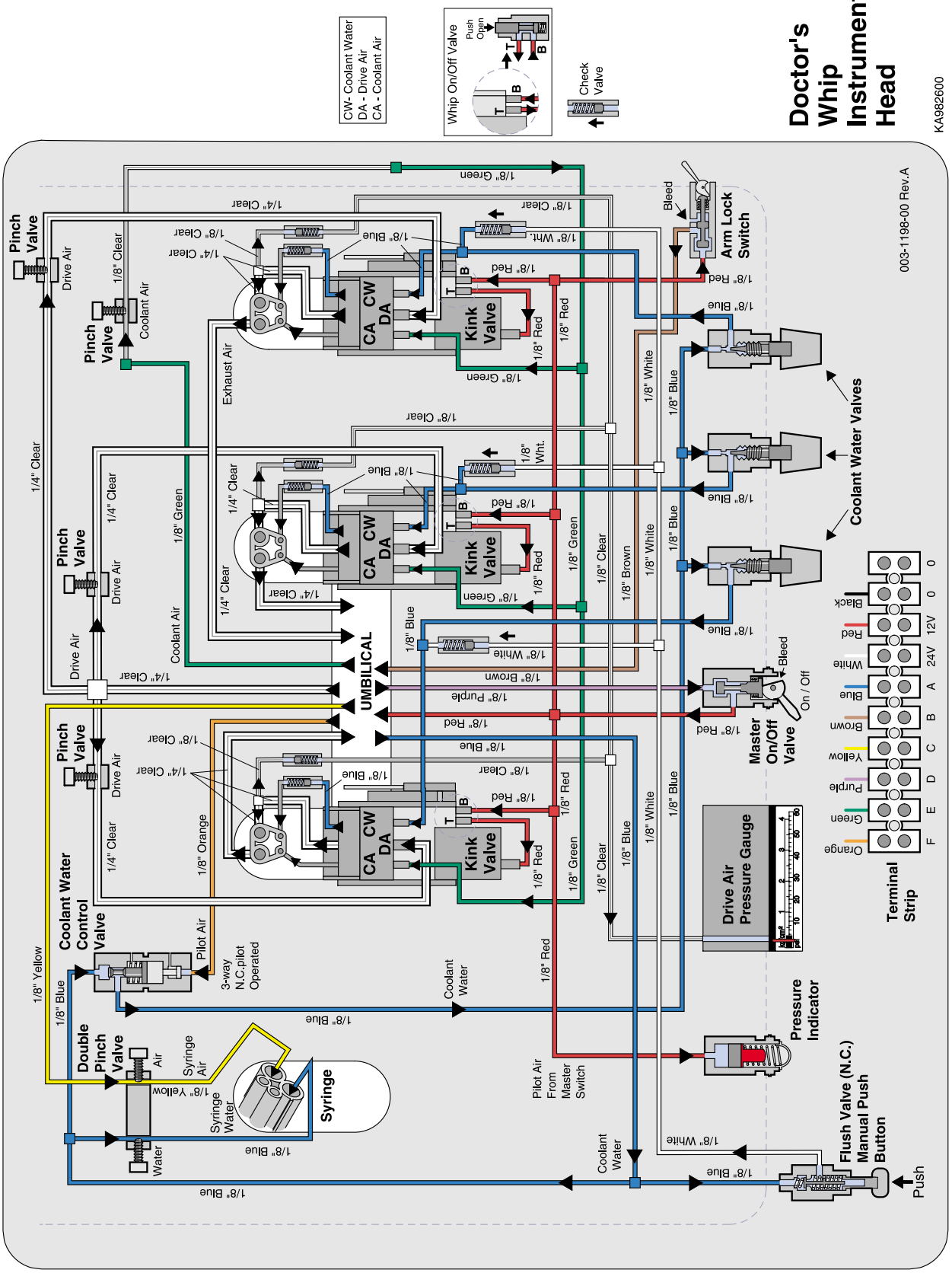
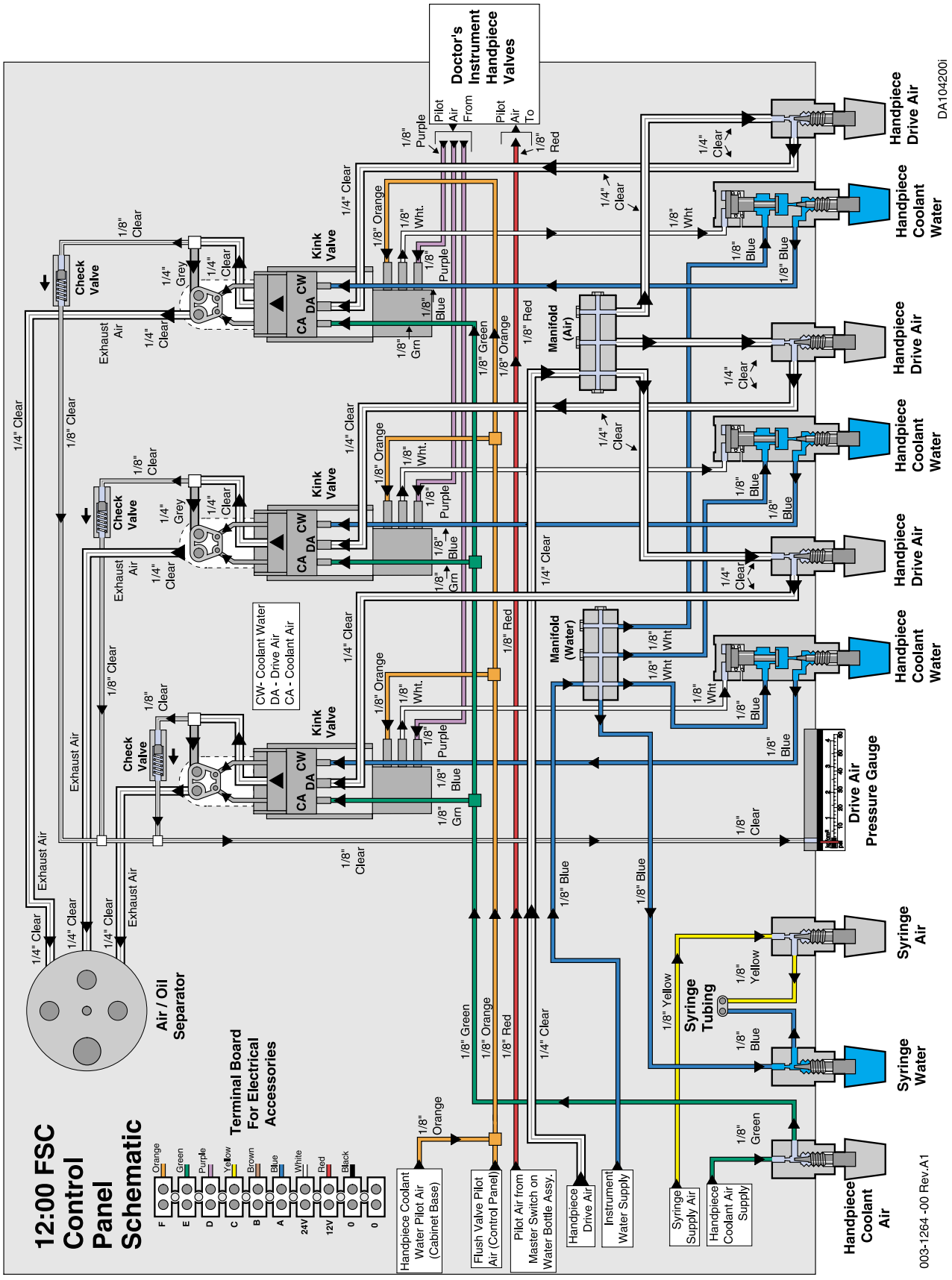

Doctor's Instrument Head Lid Assembly
KA956000
Handpiece Drive Air Needle Valve
Handpiece Coolant Water Valve (Pilot Operated)
Syringe Water Needle Valve
Handpiece Coolant Air Needle Valve
Syringe Air Needle Valve
Handpiece Supply Drive Air Manifold
Instrument Water Supply Manifold
Console & Junction Box
Coolant Water to Handpiece
Instrument Water Supply
Pilot Air
Drive Air to Handpiece
Handpiece Supply Drive Air
Pilot Air to Handpiece Coolant Water Valves
Water to Syringe
Coolant Air to Handpieces
Handpiece Coolant Air Supply
Air to Syringe
Syringe Air Supply
Instrument Water Supply
Supply Air to Flush Valve
Handpiece Supply Drive Air
Handpiece Supply Coolant Air
Syringe Supply Air
Instrument Supply Water
Pilot Air Supply for Handpiece Coolant Water
Air to Master On / Off Switch
Air from Master On / Off Switch
Spare Tubing

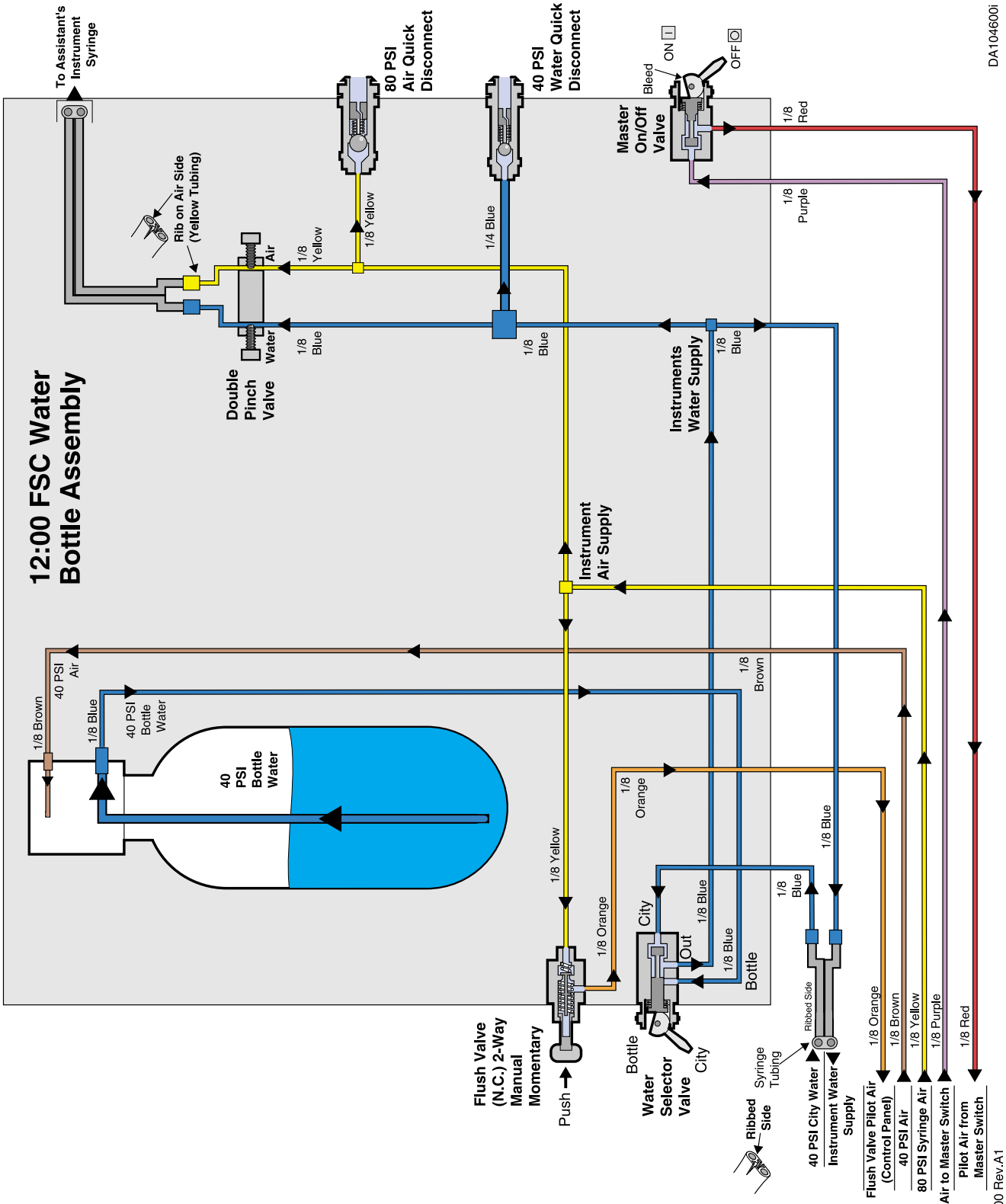
SECTION V
SCHEMATICS AND DIAGRAMS




Doctor's Whip Instrument Head
KA982600
003-1198-00 Rev.A
CW- Coolant Water
DA - Drive Air
CA - Coolant Air
Whip On/Off Valve
Push Open
Check Valve
Arm Lock Switch
Bleed
Coolant Water Valves
Master On/Off Valve
On / Off
Terminal Strip
Drive Air Pressure Gauge
Pressure Indicator
Flush Valve (N.C.) Manual Push Button
Push
Pinch Valve
Drive Air
Coolant Air
Exhaust Air
Kink Valve
CA CW DA
UMBILICAL
Coolant Water Control Valve
Pilot Air
3-way N.C.pilot Operated
Coolant Water
Pilot Air From Master Switch
Double Pinch Valve
Air
Water
Syringe Air
Syringe Water
Syringe
1/8" Clear
1/4" Clear
1/8" Green
1/8" Blue
1/8" Red
1/8" White
1/8" Wht.
1/8" Brown
1/8" Purple
1/8" Orange
1/8" Yellow
Black
Red
White
Blue
Brown
Yellow
Purple
Green
Orange
12V
24V
0
A
B
C
D
E
F

SECTION V
SCHEMATICS AND DIAGRAMS




12:00 FSC Water Bottle Assembly
To Assistant's Instrument Syringe
Rib on Air Side (Yellow Tubing)
80 PSI Air Quick Disconnect
40 PSI Water Quick Disconnect
Master On/Off Valve
Bleed
ON
OFF
Double Pinch Valve
Air
Water
1/8 Yellow
1/4 Blue
1/8 Blue
1/8 Red
1/8 Purple
Instruments Water Supply
Instrument Air Supply
40 PSI Air
40 PSI Bottle Water
1/8 Brown
1/8 Blue
1/8 Orange
1/8 Yellow
40 PSI Bottle Water
Flush Valve (N.C.) 2-Way Manual Momentary
Push
Bottle Water Selector Valve
City
Out
Bottle
Ribbed Side
Syringe Tubing
Ribbed Side
40 PSI City Water
Instrument Water Supply
Flush Valve Pilot Air (Control Panel)
40 PSI Air
80 PSI Syringe Air
Air to Master Switch
Pilot Air from Master Switch
1/8 Orange
1/8 Brown
1/8 Yellow
1/8 Purple
1/8 Red
To / From Air - Water Junction (located in cabinet base or control panel)
003-1266 -00 Rev.A1
DA104600i

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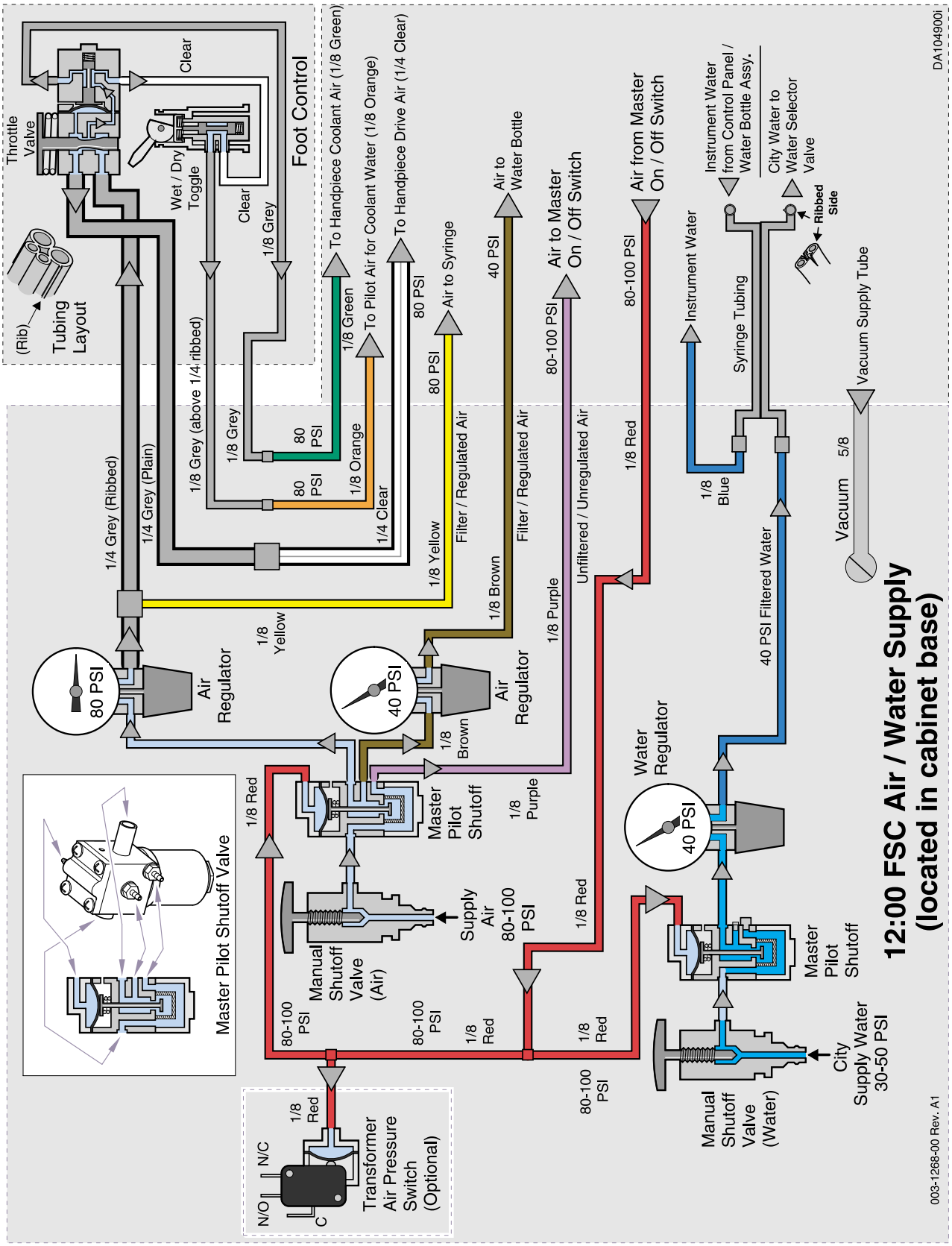
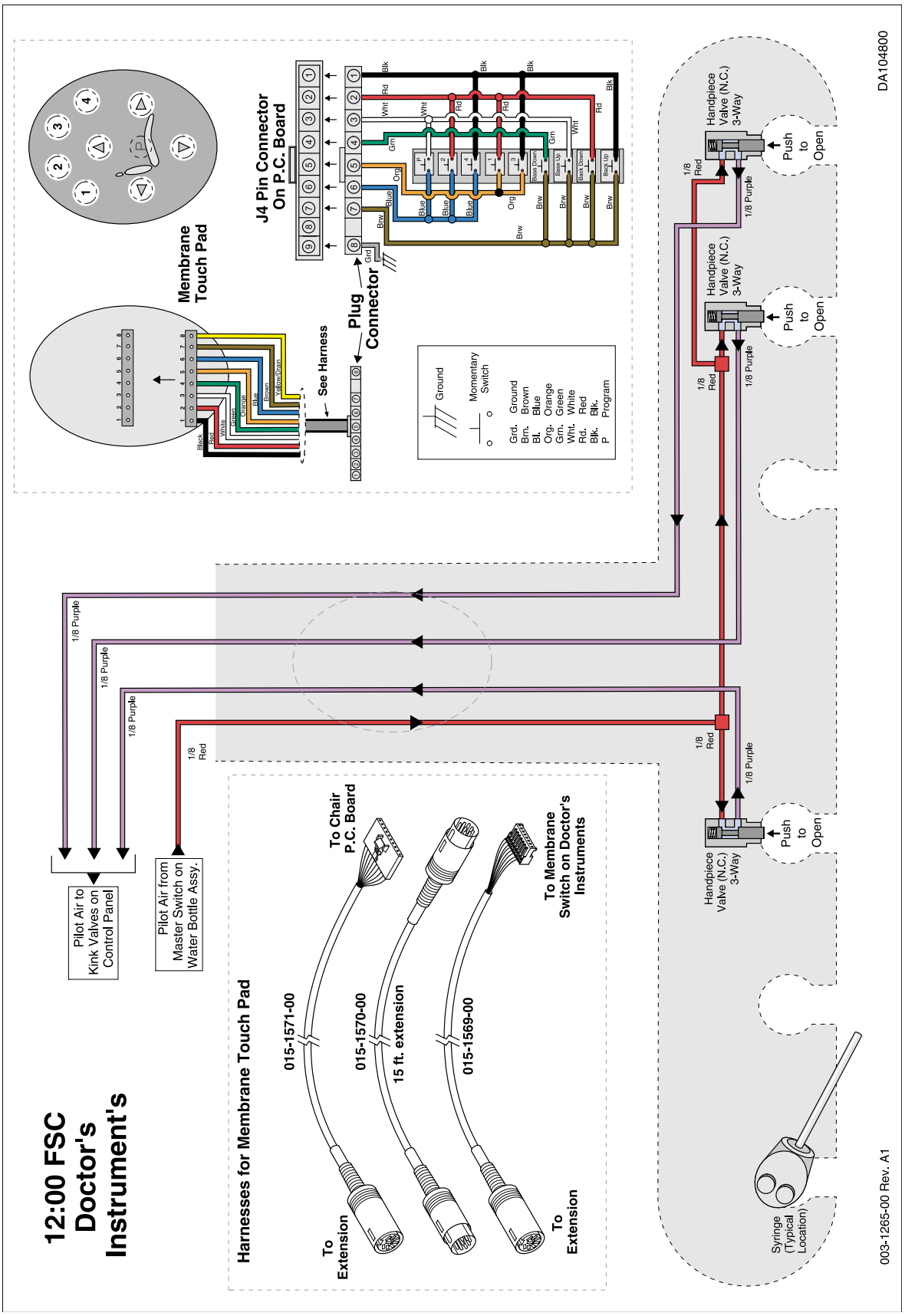
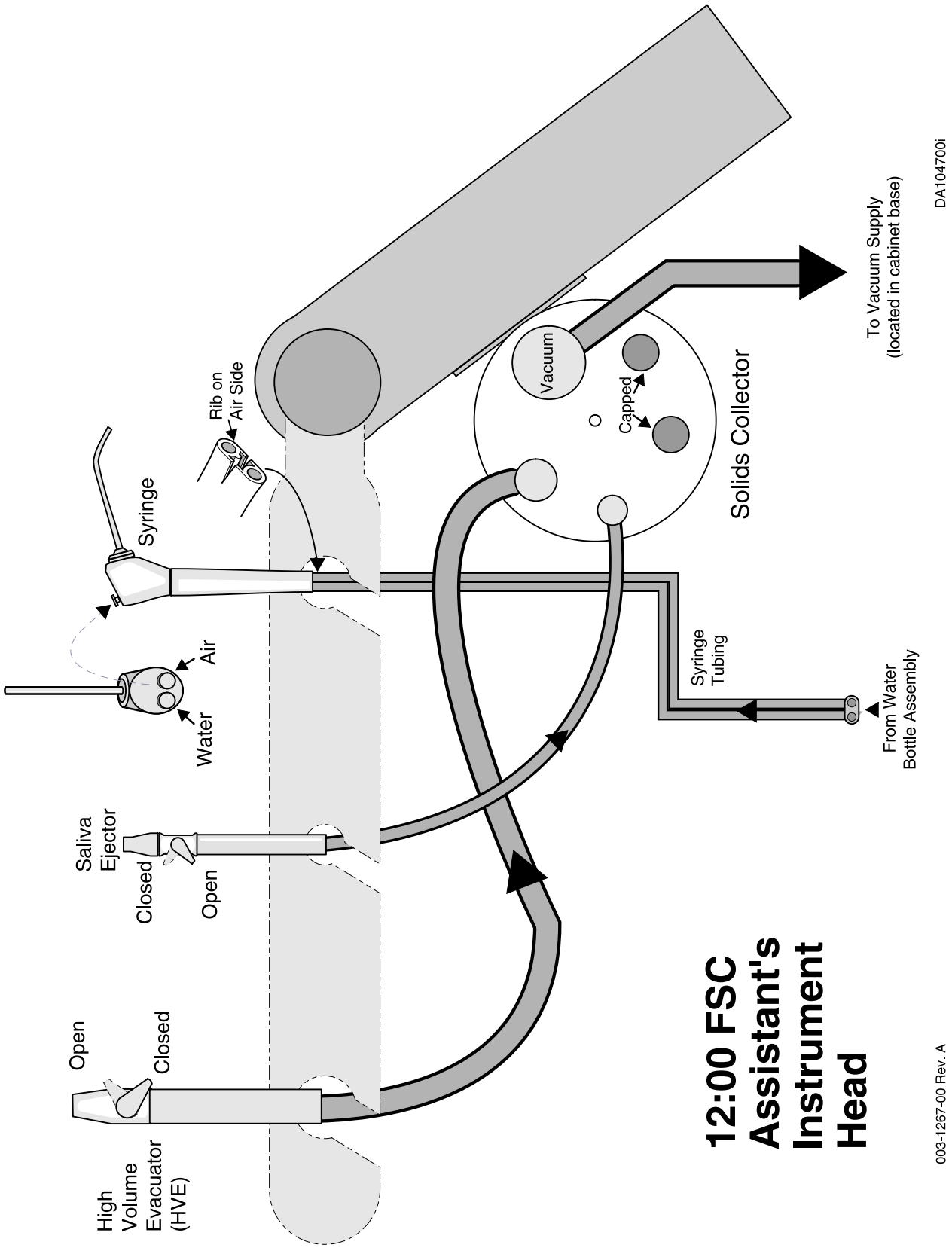
SCHEMATICS AND DIAGRAMS

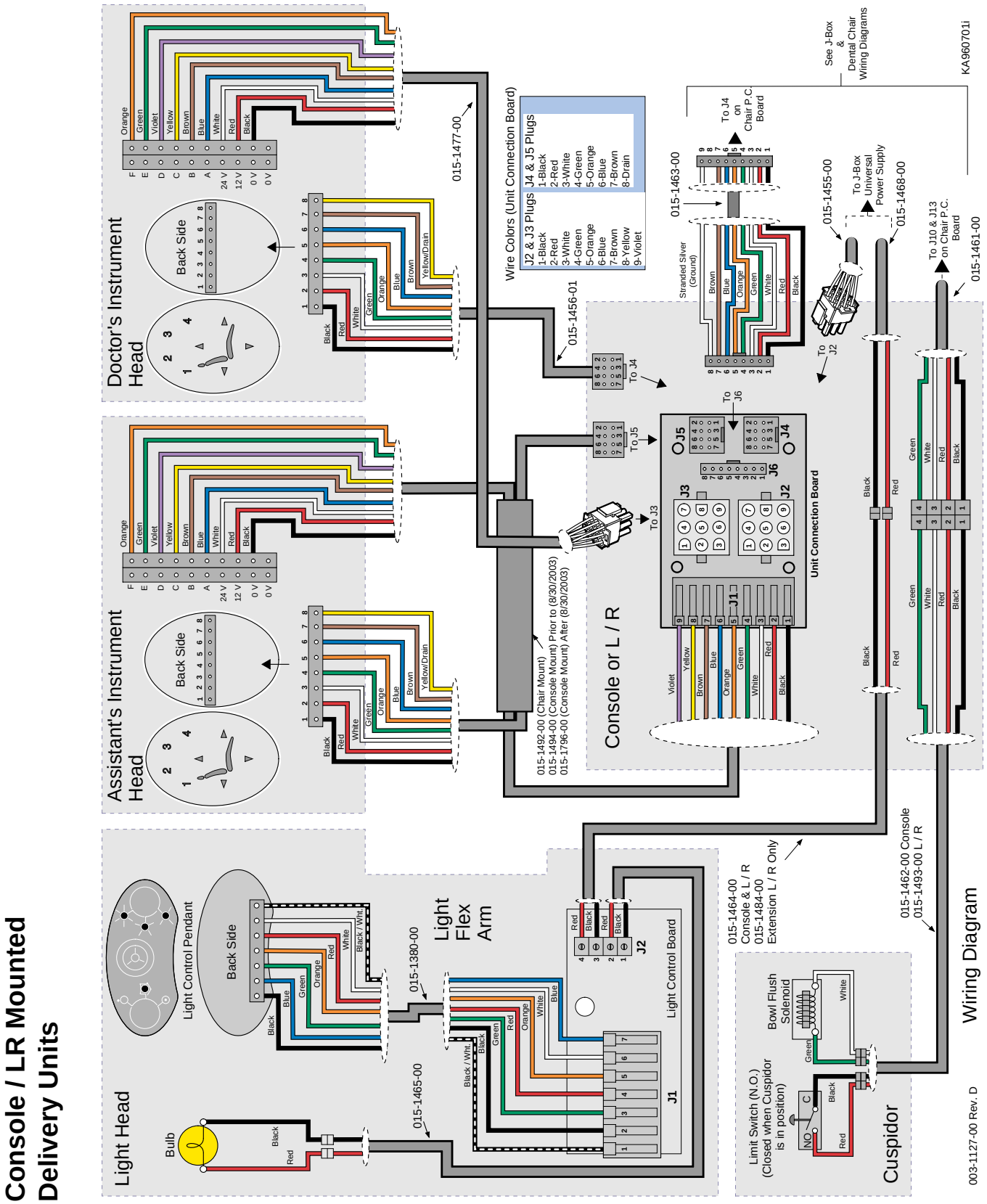



12:00 FSC
Doctor's
Instrument's
Membrane
Touch Pad
J4 Pin Connector
On P.C. Board
Plug
Connector
See Harness
Ground
Momentary
Switch
Grd. Ground
Brn. Brown
Bl. Blue
Org. Orange
Grn. Green
Wht. White
Rd. Red
Blk. Blk.
P Program
Pilot Air to
Kink Valves on
Control Panel
Pilot Air from
Master Switch on
Water Bottle Assy.
1/8 Purple
1/8 Red
Handpiece
Valve (N.C.)
3-Way
Push
to
Open
Harnesses for Membrane Touch Pad
To Chair
P.C. Board
To Membrane
Switch on Doctor's
Instruments
015-1571-00
015-1570-00
15 ft. extension
015-1569-00
To
Extension
Syringe
(Typical
Location)
DA104800
003-1265-00 Rev. A1

SECTION V
SCHEMATICS AND DIAGRAMS

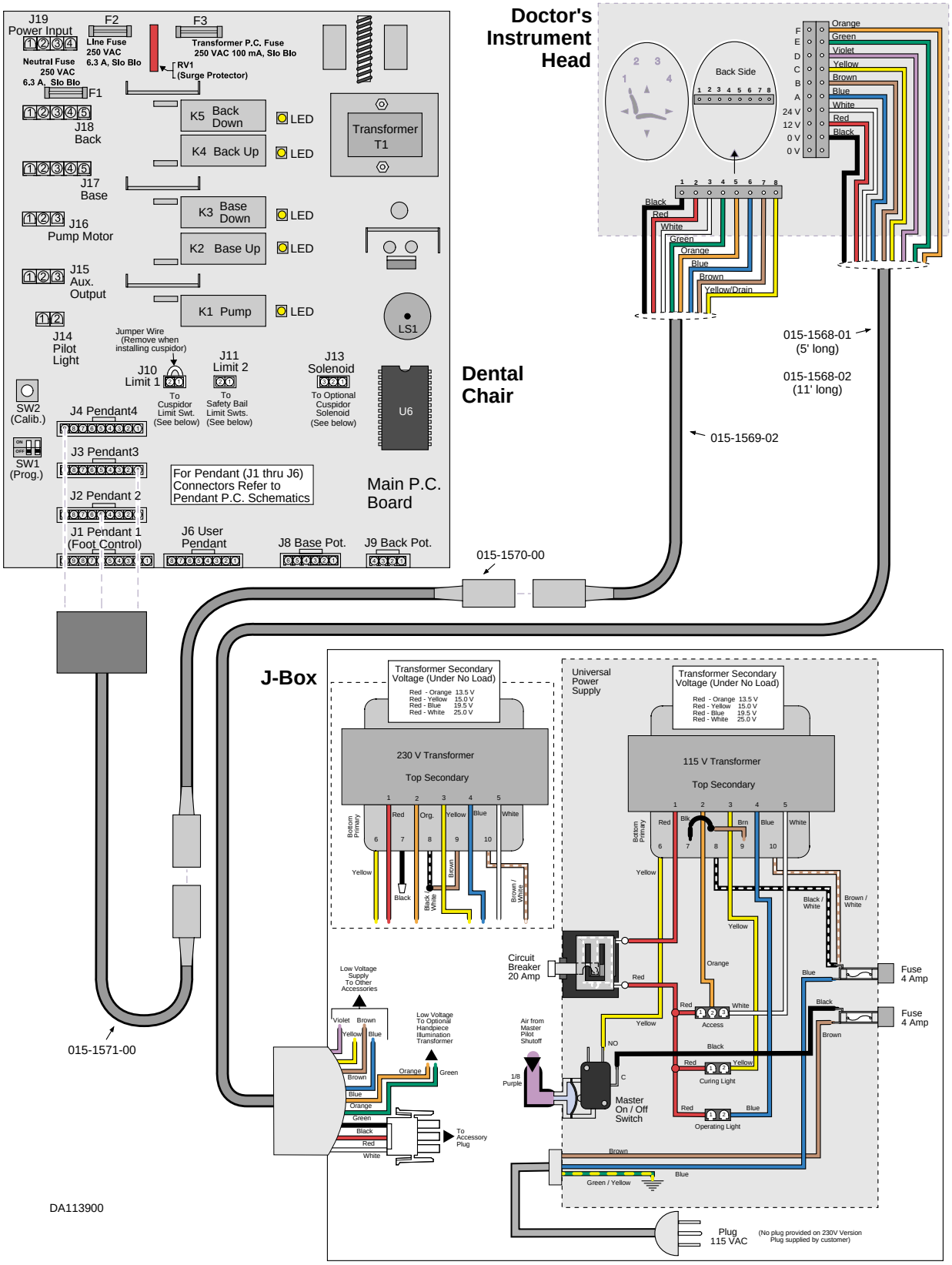


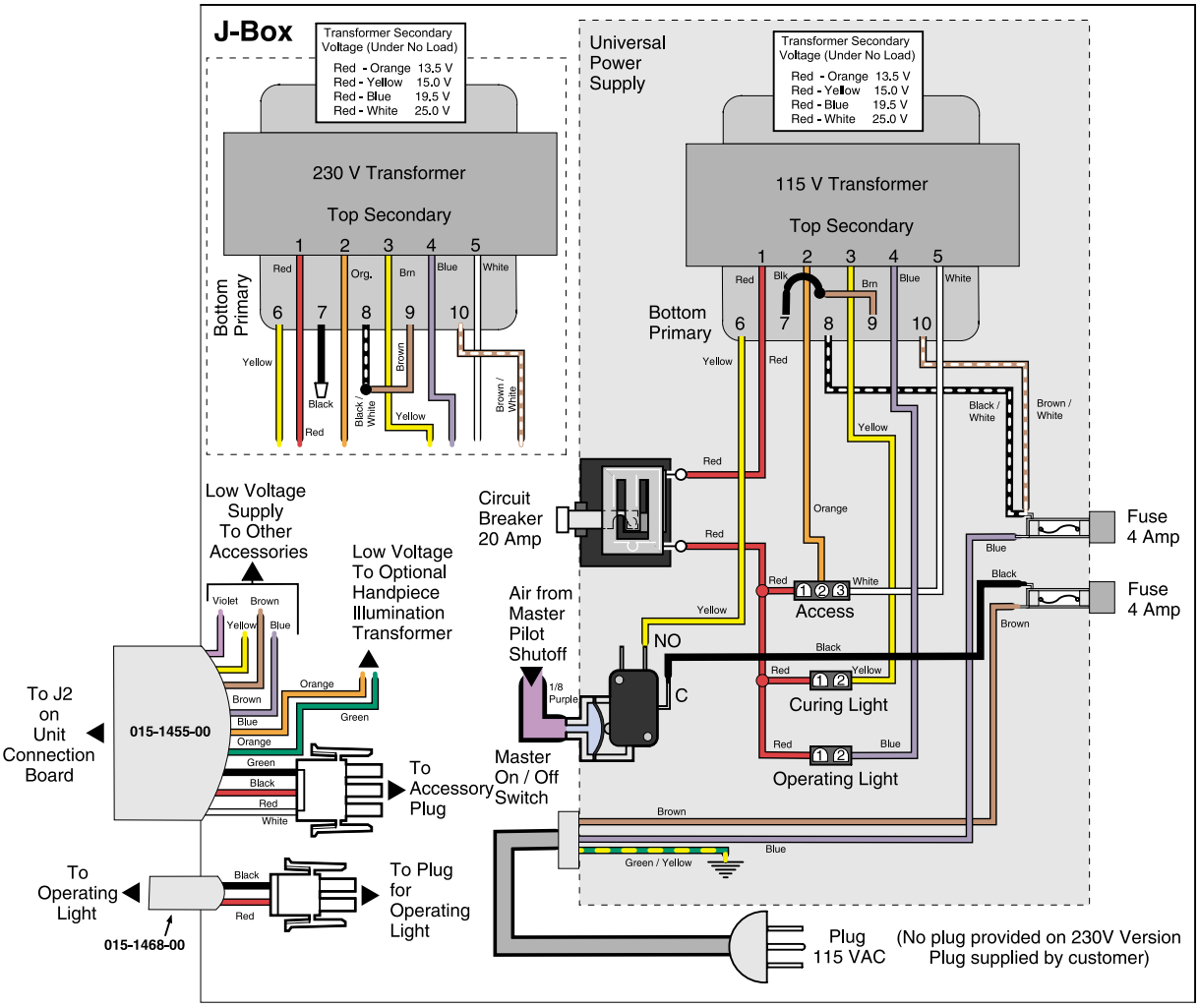
5.2 Wiring Diagrams

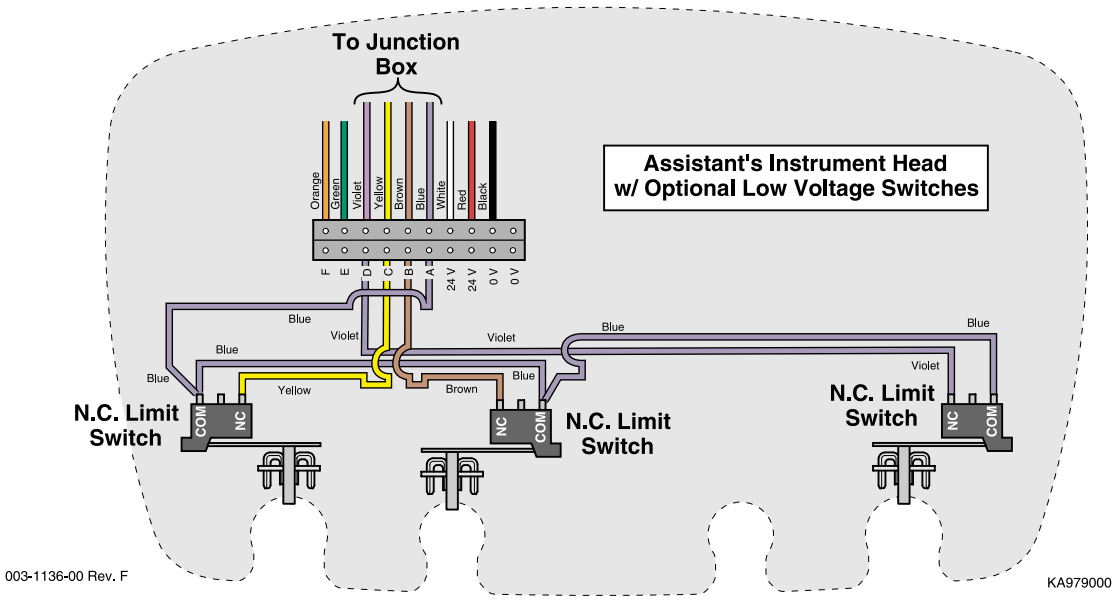


SECTION V
SCHEMATICS AND DIAGRAMS

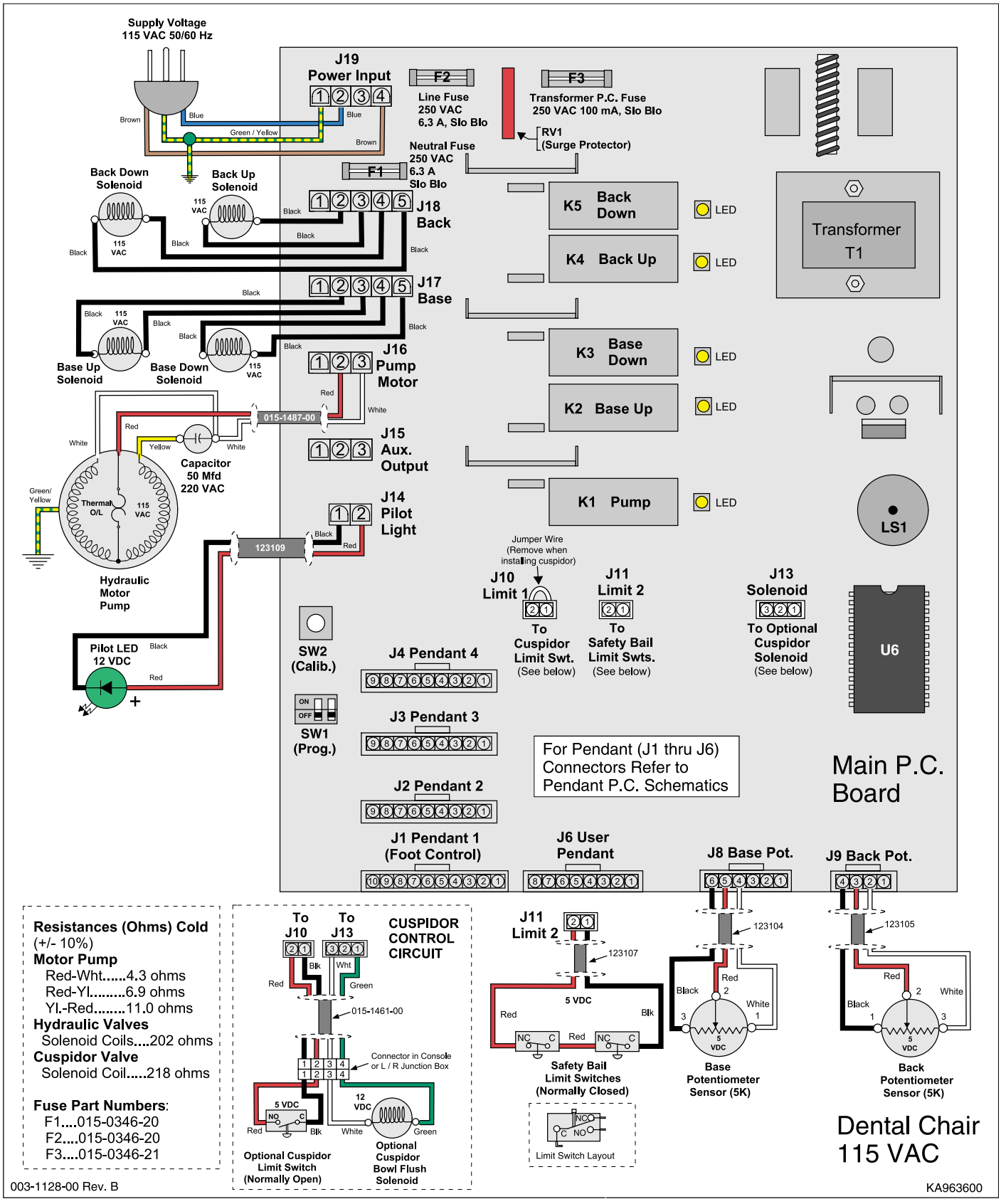
Side Mounted *(Wall/Cabinet)* Delivery Units

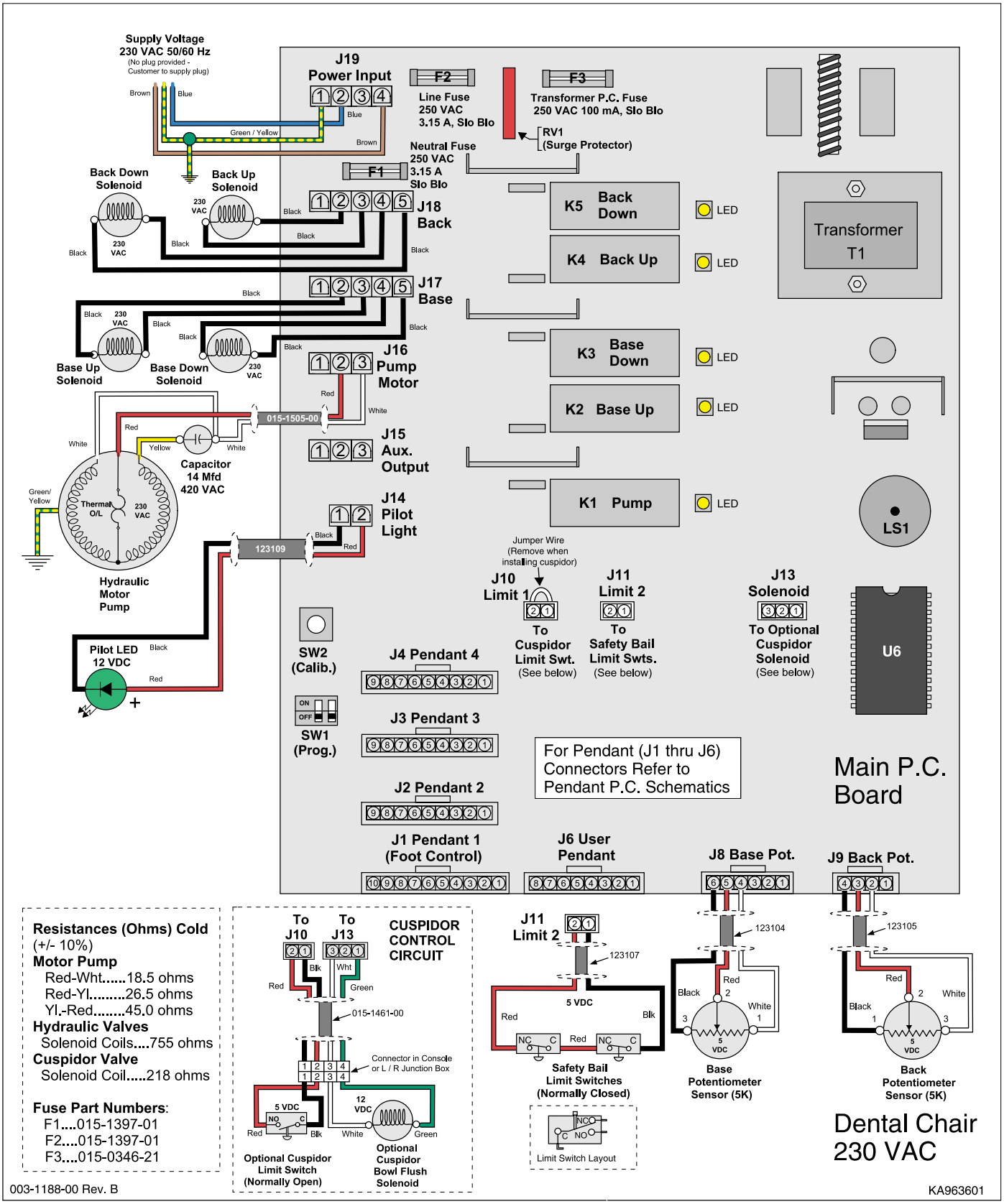



J-Box
Transformer Secondary Voltage (Under No Load)
Red - Orange 13.5 V
Red - Yellow 15.0 V
Red - Blue 19.5 V
Red - White 25.0 V
230 V Transformer
Top Secondary
Bottom Primary
Universal Power Supply
115 V Transformer
Top Secondary
Low Voltage Supply To Other Accessories
Low Voltage To Optional Handpiece Illumination Transformer
Circuit Breaker 20 Amp
Air from Master Pilot Shutoff
Fuse 4 Amp
Fuse 4 Amp
Access
Curing Light
Operating Light
Master On / Off Switch
To J2 on Unit Connection Board
015-1455-00
To Accessory Plug
To Operating Light
015-1468-00
To Plug for Operating Light
Plug 115 VAC
(No plug provided on 230V Version Plug supplied by customer)


To Junction Box
Assistant's Instrument Head w/ Optional Low Voltage Switches
N.C. Limit Switch
N.C. Limit Switch
N.C. Limit Switch
003-1136-00 Rev. F
KA979000

SECTION V
SCHEMATICS AND DIAGRAMS




Supply Voltage
230 VAC 50/60 Hz
(No plug provided - Customer to supply plug)
Brown
Blue
Green / Yellow
J19
Power Input
F2
Line Fuse
250 VAC
3.15 A, Slo Blo
F3
Transformer P.C. Fuse
250 VAC 100 mA, Slo Blo
RV1
(Surge Protector)
Neutral Fuse
250 VAC
3.15 A
Slo Blo
F1
Back Down Solenoid
Back Up Solenoid
230 VAC
J18
Back
J17
Base
J16
Pump
Motor
015-1505-00
J15
Aux.
Output
J14
Pilot
Light
123109
Capacitor
14 Mfd
420 VAC
Thermal O/L
Hydraulic
Motor
Pump
Base Up Solenoid
Base Down Solenoid
Pilot LED
12 VDC
K5 Back Down
K4 Back Up
K3 Base Down
K2 Base Up
K1 Pump
LED
Transformer
T1
LS1
Jumper Wire
(Remove when installing cuspidor)
J10
Limit 1
To Cuspidor Limit Swt.
(See below)
J11
Limit 2
To Safety Bail Limit Swts.
(See below)
J13
Solenoid
To Optional Cuspidor Solenoid
(See below)
U6
SW2
(Calib.)
SW1
(Prog.)
ON
OFF
J4 Pendant 4
J3 Pendant 3
J2 Pendant 2
J1 Pendant 1
(Foot Control)
J6 User
Pendant
J8 Base Pot.
J9 Back Pot.
For Pendant (J1 thru J6) Connectors Refer to Pendant P.C. Schematics
Main P.C. Board
Resistances (Ohms) Cold
(+/- 10%)
Motor Pump
Red-Wht.....18.5 ohms
Red-Yl.....26.5 ohms
Yl.-Red.....45.0 ohms
Hydraulic Valves
Solenoid Coils....755 ohms
Cuspidor Valve
Solenoid Coil.....218 ohms
Fuse Part Numbers:
F1....015-1397-01
F2....015-1397-01
F3....015-0346-21
To J10
To J13
CUSPIDOR CONTROL CIRCUIT
Blk
Wht
Red
Green
015-1461-00
Connector in Console or L / R Junction Box
5 VDC
12 VDC
Optional Cuspidor Limit Switch (Normally Open)
Optional Cuspidor Bowl Flush Solenoid
123107
Safety Bail Limit Switches (Normally Closed)
Limit Switch Layout
123104
Base Potentiometer Sensor (5K)
123105
Back Potentiometer Sensor (5K)
Dental Chair 230 VAC
003-1188-00 Rev. B
KA963601

SECTION V
SCHEMATICS AND DIAGRAMS

SECTION VI
PARTS LIST

6.1 Introduction

The illustrated parts list provides information for identifying and ordering the parts necessary to maintain the unit in peak operating condition. Refer to paragraph 1.5 for parts ordering information.

6.2 Description of Columns

The Item column of the parts list gives a component its own unique number. The same number is given to the component in the parts illustration. This allows a part number of a component to be found if the technician can visually spot the part on the illustration. The technician simply finds the component in question on the illustration and notes the item number of that component. Then, he finds that item number in the parts list. The row corresponding to the item number gives the technician the part number, a description of the component, and quantity of parts per subassembly. Also, if a part number is known, the location of that component can be determined by looking for the item number of the component on the illustration.

The Part No. column lists the MIDMARK part number for that component.

The Description column provides a physical description of the component.

The Qty. column lists the number of that particular component required for the subassembly. The letters “AR” denote “as required” when quantities of a particular component cannot be determined, such as: adhesive.

Bullets { • } in the Part No. column and the Description column show the indenture level of a component. If a component does not have a bullet, it is a main component of that illustration. If a component has a bullet, it is a subcomponent of the next component listed higher in the parts list than itself that does not have a bullet. Likewise, if a component has two bullets, it is a subcomponent of the next component listed higher in the parts list than itself that has only one bullet.

6.3 Torque Specifications and Important Assembly Notes

When specific assembly torque specifications, measurements, or procedures have been identified, by our engineering department, as required to assure proper function of the unit, those torque specifications measurements, and procedures will be noted on the parts illustrations. Adherence to these requirements is essential.

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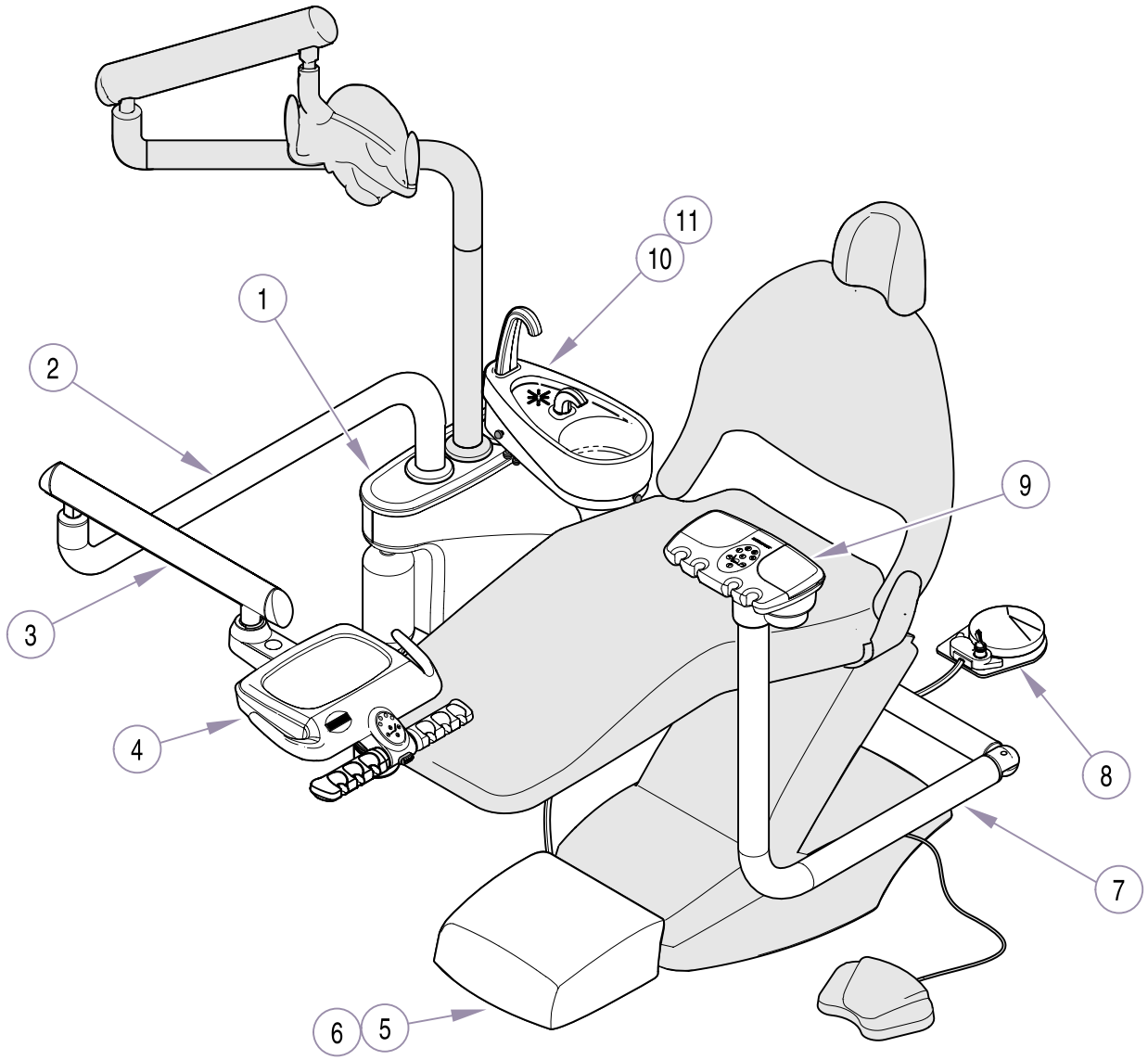
Pictorial Index
Console Operatory



KA956901I

Part No.	Description	Page	Part No.	Description	Page
1	Console Assembly	6-37	6	J-Box Pre Installation Kit *(not shown)*	6-47
2	Unit Arm Assy - *Console Mtd Units*	6-31	7	Assistant's Instrument Arm - *Rear Mounted*	6-43
3	Delivery Flex Arm - *28 in.*	6-34		*Console Mounted (not shown)*	6-45
4	ProCenter Delivery Unit Assembly	6-15	8	Foot Control Assembly	6-54
	Whip Delivery Unit Assembly *(not shown)*	6-24	9	Assistant's Unit Assy.	6-39
5	Styled Junction Box	6-48	10	Cuspidor Assembly	6-38
	Square Junction Box *(not shown)*	6-49	11	Cuspidor Console Mount Assembly	6-41
	Small Junction Box *(not shown)*	6-50			

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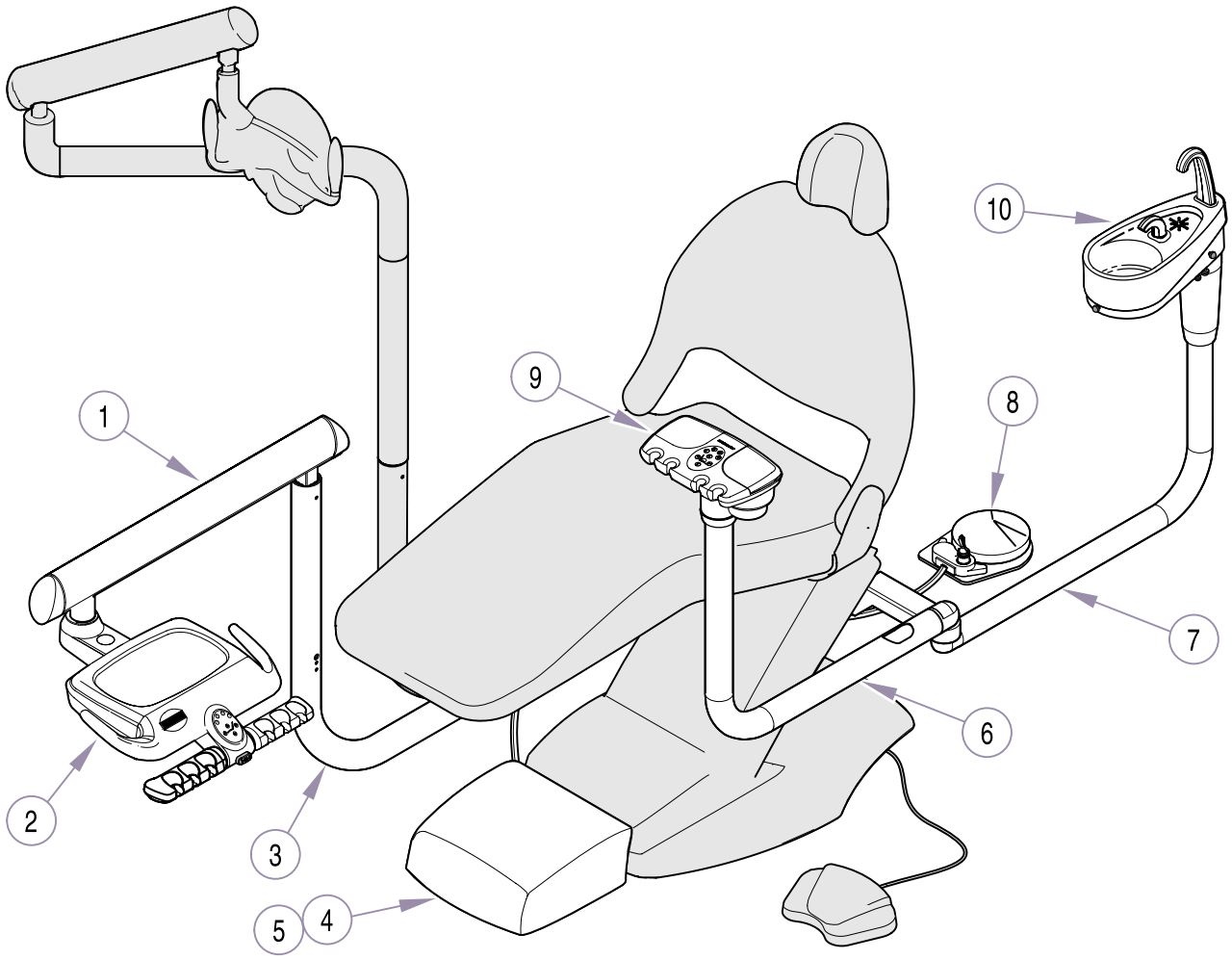
Pictorial Index
L/R Operatory



KA976900i

Part No.	Description	Page	Part No.	Description	Page
1	Delivery Flex Arm - *28 in.*	6-34	5	J-Box Pre Install. Kit *(not shown)*	6-42
2	ProCenter Delivery Unit Assembly	6-15	6	Assistant's Instrument Arm -	
	Whip Delivery Unit Assembly *(not shown)*	6-24		*Rear Mtd with L/R Cuspidor*	6-39
				Rear Mounted (not shown)	6-38
3	Unit Arm Assembly- *L/R Mtd. Units*	6-32	7	L/R Cuspidor Arm Assembly	6-37
4	Styled Junction Box	6-48	8	Foot Control Assembly	6-49
	Square Junction Box *(not shown)*	6-49	9	Assistant's Unit Assy.	6-39
	Small Junction Box *(not shown)*	6-50	10	Cuspidor Assembly	6-38

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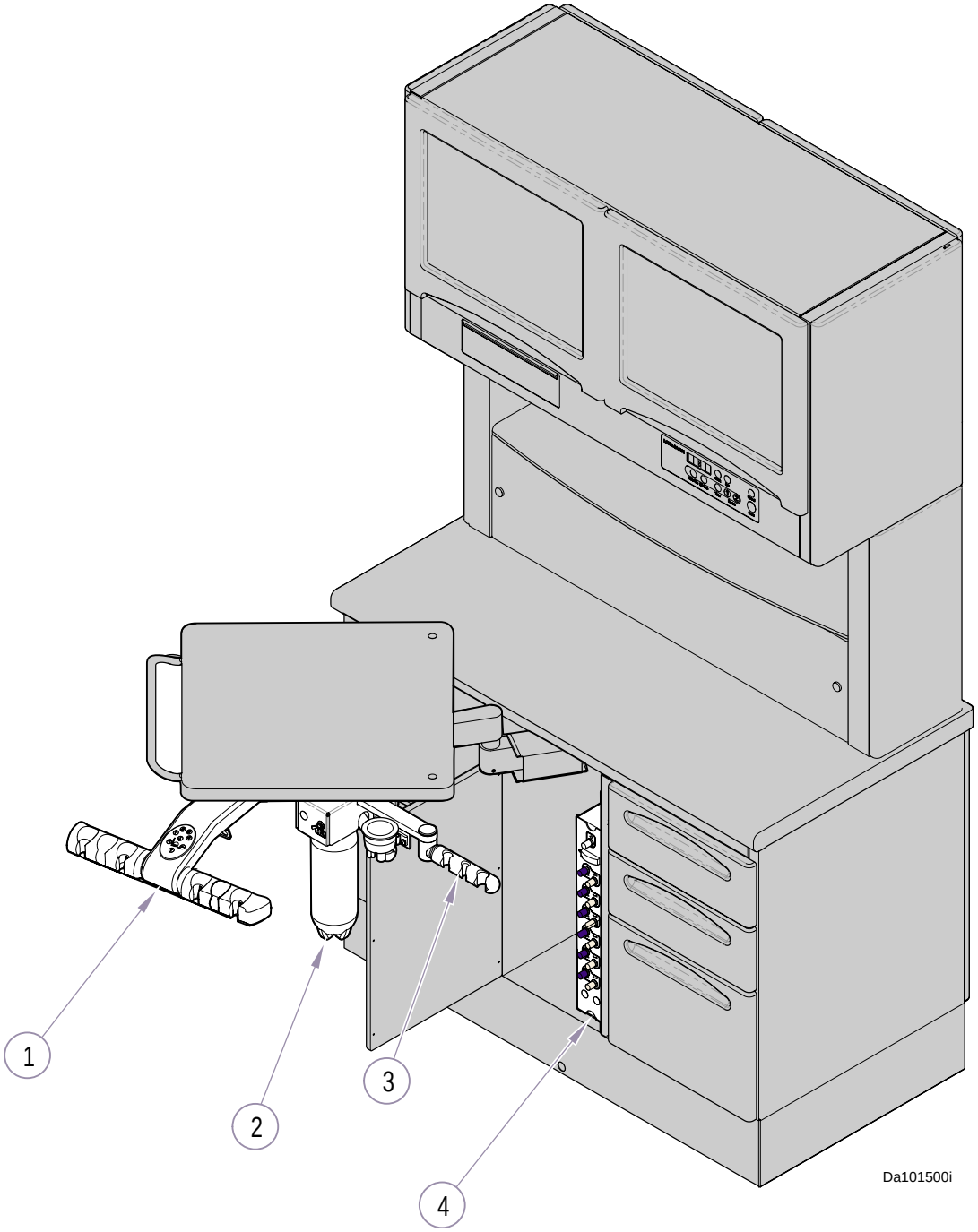
Pictorial Index
12:00 Casework Mounted ProCenter Delivery Unit



DA101500i

	Part No.	Description	Page
1		12:00 Casework Mtd.ProCenter Delivery Unit	6-55
2		Water Bottle Assy	6-56
3		Vacuum Instrument Arm Assy	6-57
4		Delivery Unit Control Panel Assembly	6-58

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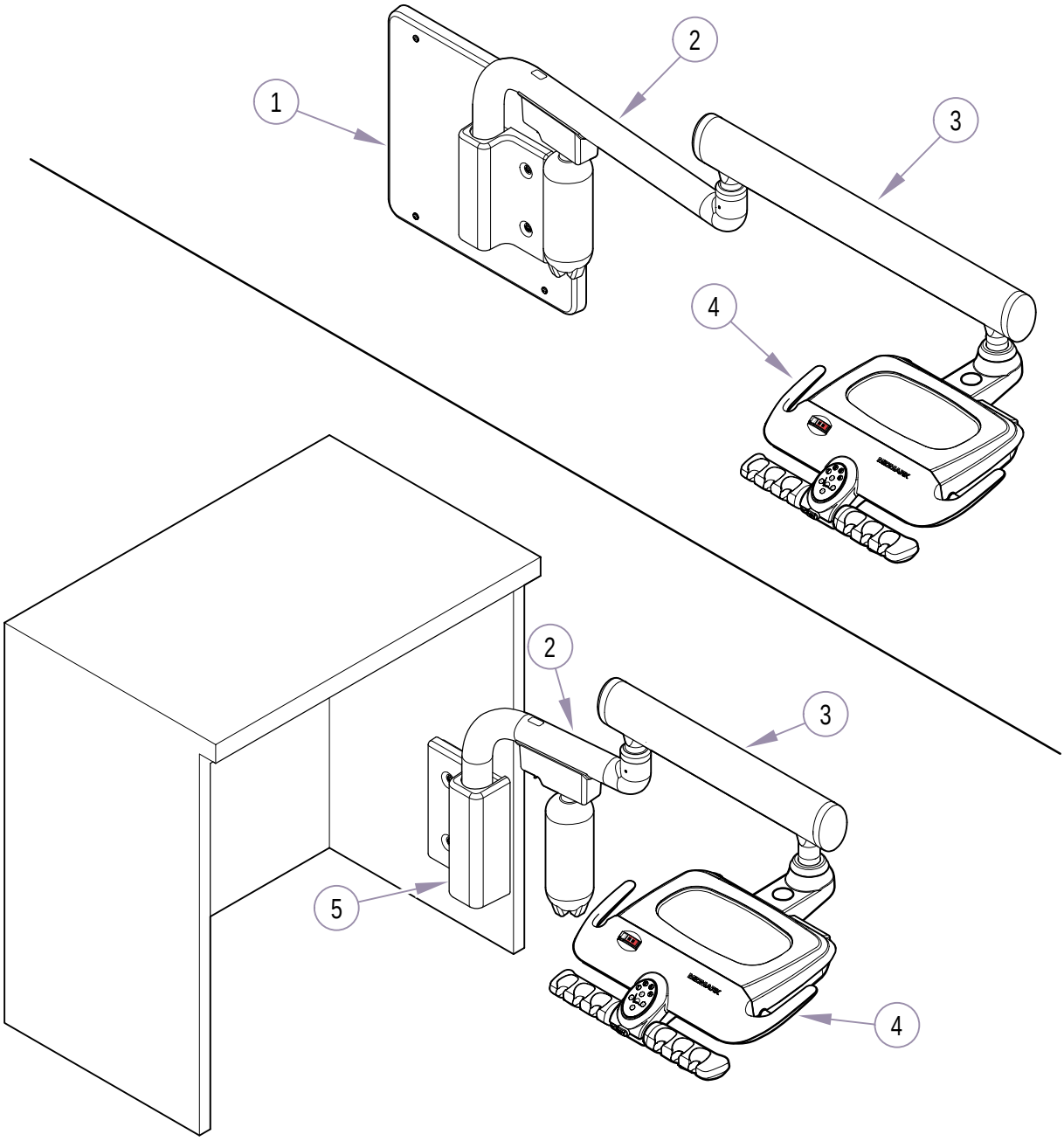
Pictorial Index
Side Delivery Unit
(Wall / Cabinet Mtd.)



DA115200i

Part No.	Description	Page	Part No.	Description	Page
1	Wall / Cabinet Mtg. Components	6-36	4	ProCenter Delivery Unit Assembly	6-15
2	Unit Arm Assy - *Wall/Cabinet Units*	6-33	5	Wall / Cabinet Mtg. Components	6-36
3	Delivery Flex Arm		6	Square Junction Box *(not shown)*	6-49
	- 28 in.	6-34		Small Junction Box *(not shown)*	6-50
	- 16 in.	6-35			

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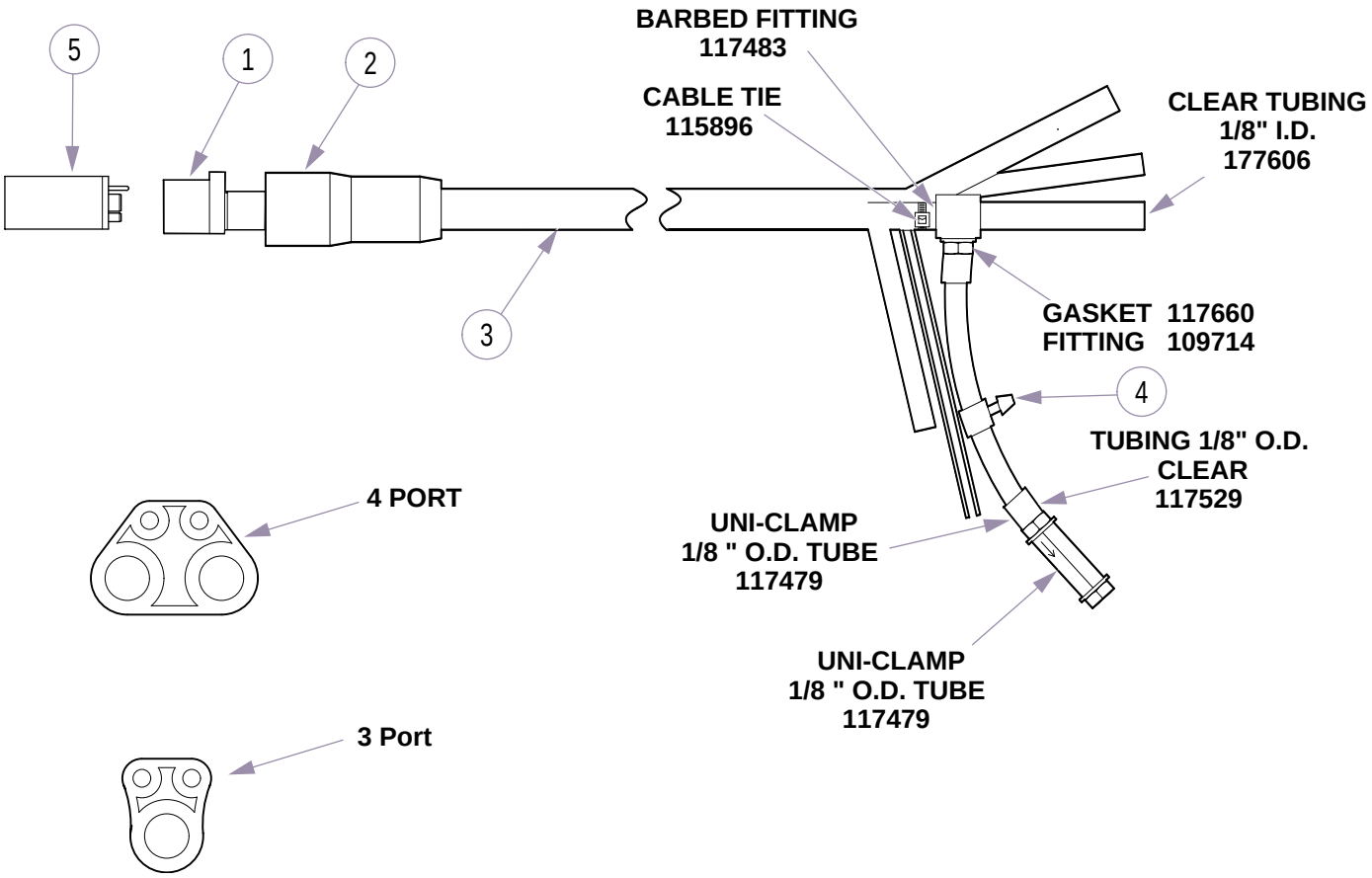
ProCenter Handpiece Tubing



Add-a-Handpiece Kits

(include kink valve & all tubing, valves to add one handpiece to ProCenter delivery units)

002-0693-00 .....4-Port, Straight
002-0693-01 .....3-Port, Straight
002-0693-02 .....4-Port, Straight, ISO-C
002-0693-03 .....4-Port, Straight, w/ Fibre Optics
002-0693-04 .....without handpiece tubing

KA956700

Description	Assembly Number (Includes items 1 thru 5 and all valves, fittings & tubing shown above)	Adapter Assy (Item #1)	Connection Nut (Item #2)	Tubing (Item #3)	Fitting (Item #4)	Lamp Module (Item #5)
4-Port, Straight	029-2603-00 ***(12:00 Units)*** 029-2603-01	120203	057-0734-00	S059-00118 (ordered per ft.)	none	none
3-Port, Straight	029-2604-00 ***(12:00 Units)*** 029-2604-01	120203	057-0733-00	S059-00119 (ordered per ft.)	none	none
4-Port, Straight ISO-C	029-2605-00 ***(12:00 Units)*** 029-3057-00	n/a	057-0734-00	120632-01	117477	none
4-Port, Straight w/Fibre Optics	029-2633-00 ***(12:00 Units)*** 029-3057-01	n/a	057-0734-00	120632-1 ***(12:00 Units)*** 120721-01	117477	120722

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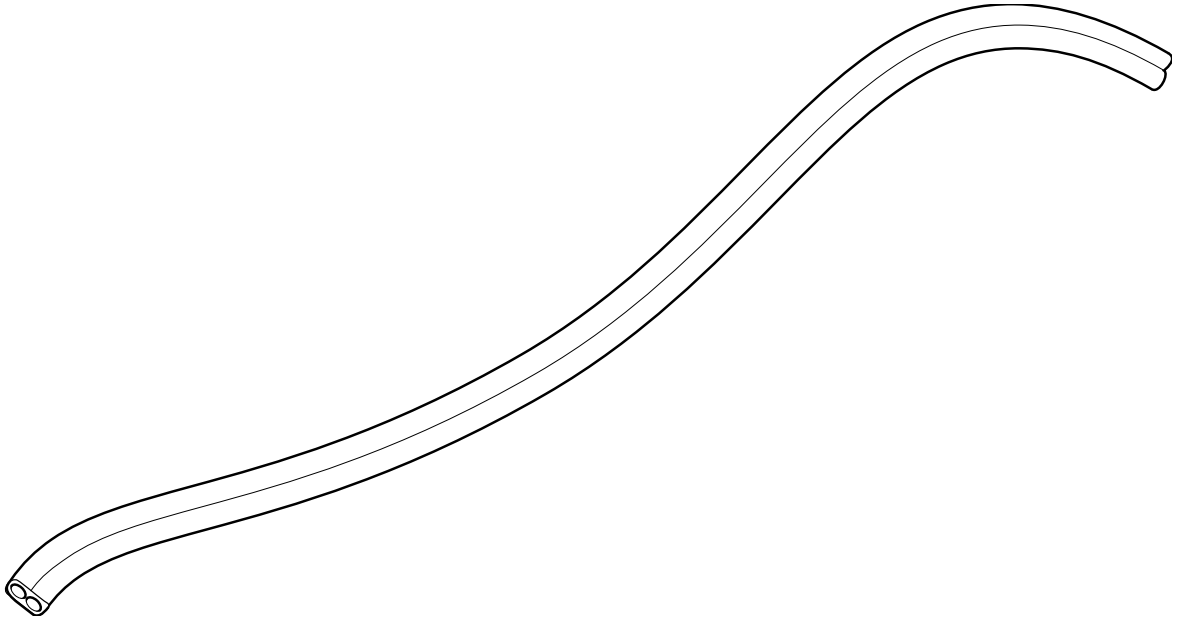
ProCenter Syringe Tubing *(Unheated & Heated)*



EQUIPMENT ALERT

Heated syringe tubing is slightly longer than standard handpiece tubing. **Do not attempt to shorten tubing**. The entire length of tubing is necessary for proper function of the heated syringe. *[Resistance measured across Molex connector **must** be 10±1 ohms @ 77° F (25° C)].*

KA991900i

Part No.	Description	Qty
	Doctor's Syringe Tubing:	
	for Chair, Wall, & Cabinet Mtd. Units	
S059-00120	Unheated	per ft.
015-1509-00	Heated	1
	for 12:00 Casework Mtd. Units	
S059-00120	Unheated	per ft.
151867-01	Heated	1

Part No.	Description	Qty
	Assistant's Syringe Tubing:	
	for Chair, Wall, & Cabinet Mtd. Units	
S059-00120	Unheated	per ft.
015-1509-00	Heated	1
	for 12:00 Casework Mtd. Units	
S059-00120	Unheated	per ft.
151867-01	Heated	1

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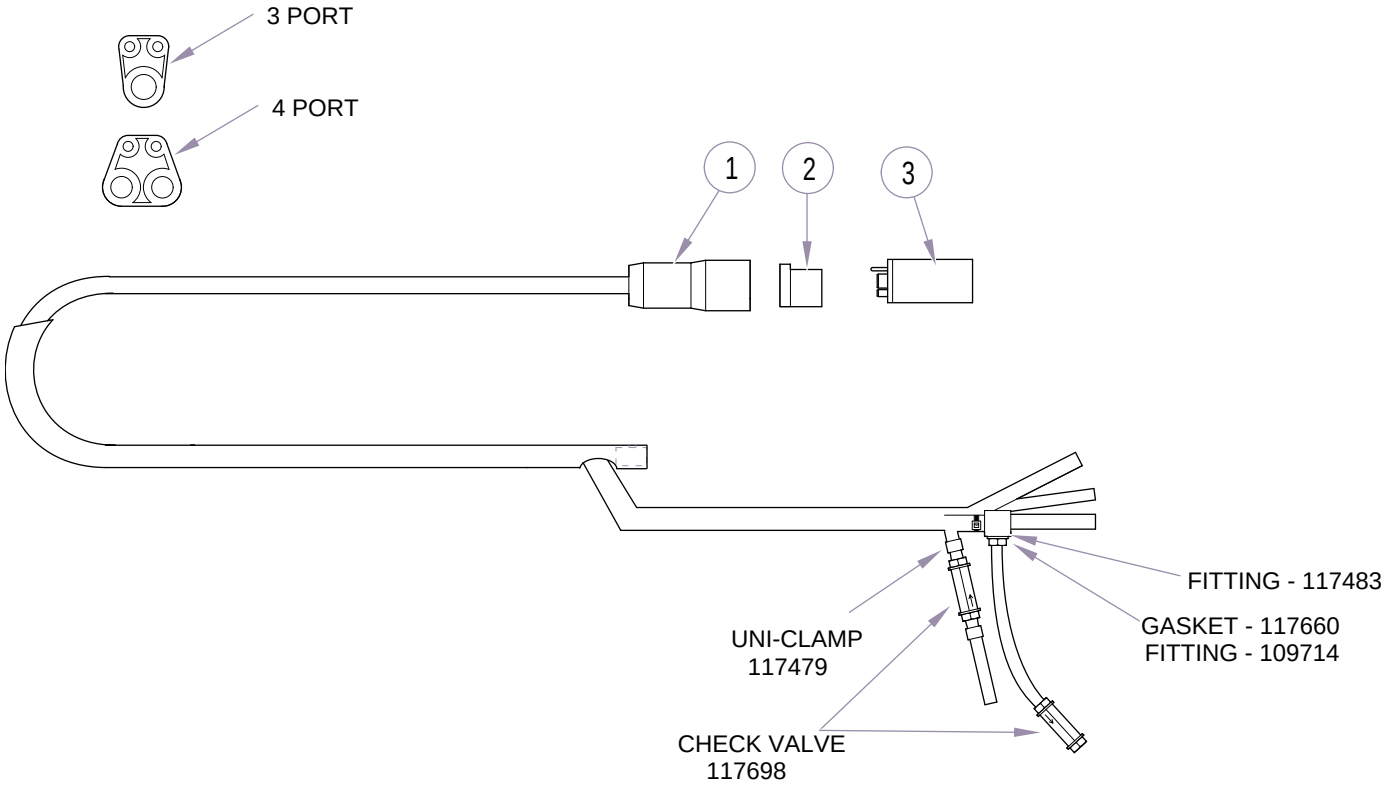
Whip Handpiece Tubing



KA935800

Description	Assembly Number (Includes items 1 thru 3, and all valves, fittings & tubing shown above)	Connection Nut (Item #1)	Adapter Assy (Item #2)	Lamp Module (Item #3)
4-Port	151914-01	057-0734-00	120203	none
3-Port	151913-01	057-0733-00	120205	none
4-Port, w/ Lamp Module	152021-01	-	-	120722
4-Port, ISO-C	152022-01	057-0734-00	-	none

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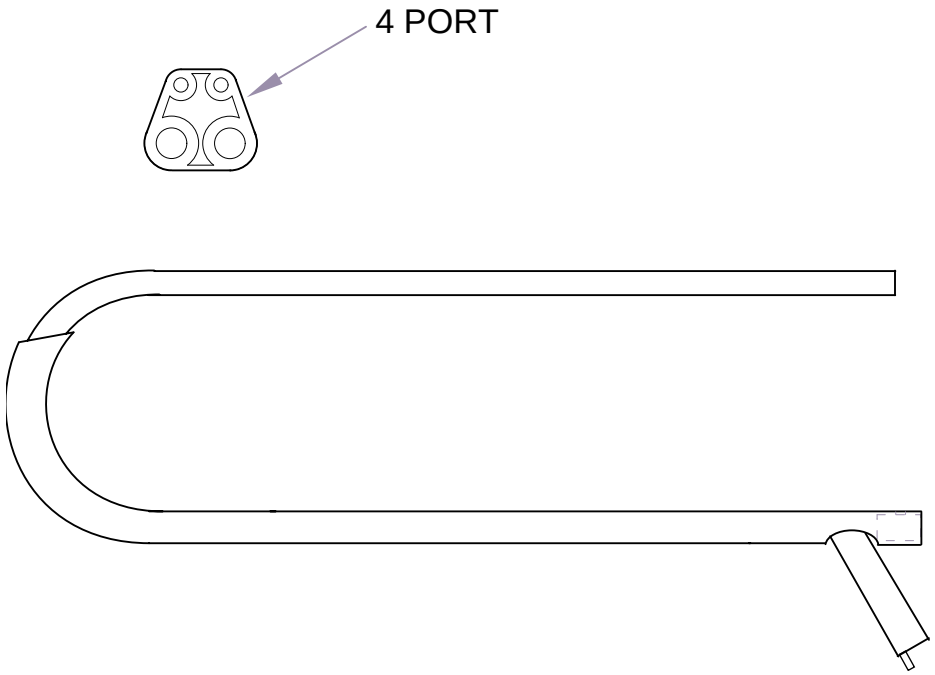
Whip Syringe Tubing



EQUIPMENT ALERT
Heated syringe tubing is slightly longer than standard handpiece tubing.
Do not attempt to shorten tubing. The entire length of tubing is necessary for proper function of the heated syringe. *[Resistance measured across Molex connector **must** be 10±1 ohms @ 77° f (25° C)].*

KA935900

Part No.	Description	Quantity	Part No.	Description	Quantity
151941-01	4-Port, Unheated (shown)	1	151921-01	4-Port, Heated	1

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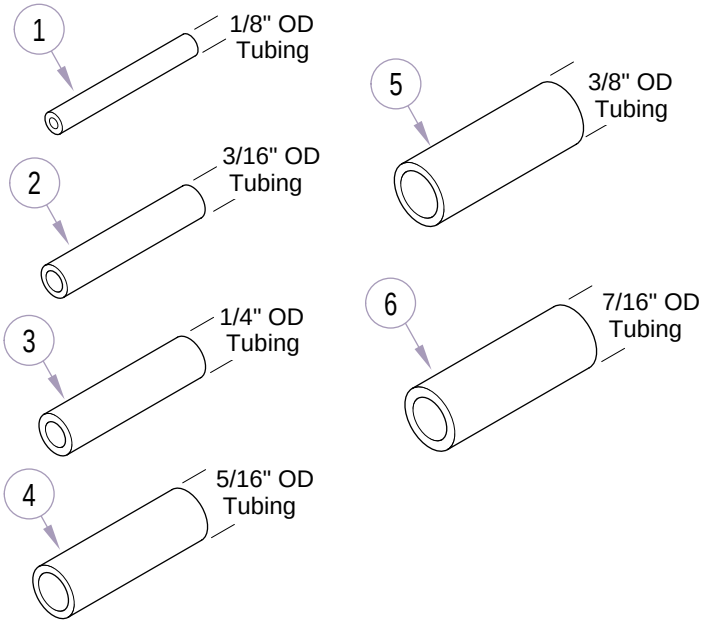
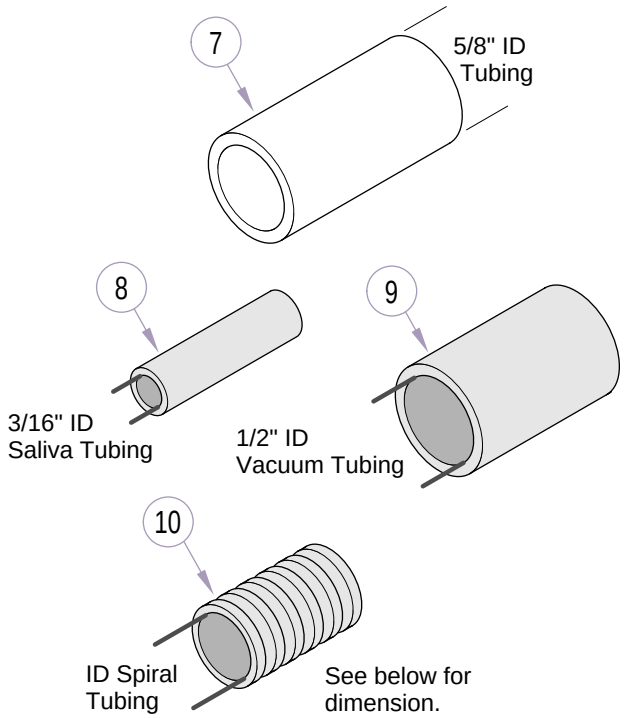
Internal Tubing

O.D. Tubing



I.D. Tubing



NOTE:
All tubing must be ordered by the foot. Therefore, the quantity ordered is the amount of feet of tubing needed. Example: ordering a quantity of 2 would be ordering two feet of tubing.

AF211701i

Item	Part No.	Description	Qty
1	177523	Blue Tubing, 1/8” O.D.	AR
	177551	Brown Tubing, 1/8” O.D.	AR
	177529	Clear Tubing, 1/8” O.D.	AR
	176016	105° PVC Tubing, 1/8” O.D.	AR
	177552	Green Tubing, 1/8” O.D.	AR
	177532	Orange Tubing, 1/8” O.D.	AR
	177531	Red Tubing, 1/8” O.D.	AR
	177528	Violet Tubing, 1/8” O.D.	AR
	275257	White Tubing, 1/8” O.D.	AR
	177530	Yellow Tubing, 1/8” O.D.	AR
2	177606	Clear Tubing, 3/16” O.D.	AR
3	177483	Black Tubing, 1/4” O.D.	AR
	177524	Blue Tubing, 1/4” O.D.	AR
	177533	Clear Tubing, 1/4” O.D.	AR
	275263	Yellow Tubing, 1/4” O.D.	AR

Item	Part No.	Description	Qty
4	176037	Black Tubing, 5/16” O.D.	AR
5	275274	Black Tubing, 3/8” O.D.	AR
6	R4761	Clear Tubing, 7/16” O.D.	AR
7	R4786	Clear Tubing, 5/8” I.D.	AR
	S059-00131	Shadow Grey Tubing 5/8” Smooth	AR
8	S059-00127	Shadow Grey Tubing, Saliva Ejector, 3/16” I.D.	AR
9	S059-00128	Shadow Grey Tubing, Vacuum, 1/2” I.D.	AR
10	S059-00125	Shadow Grey Spiral Tubing, 1/2” I.D.	AR
	S059-00126	Shadow Grey Spiral Tubing, 5/8” I.D.	AR
	S059-00121	Shadow Grey Spiral Tubing, 3/4” I.D.	AR
	S059-00123	Shadow Grey Spiral Tubing, 1” I.D.	AR
	275225	Grey Spiral Tubing, 1-1/4” I.D.	AR
	S059-00122	Grey Spiral Tubing, 1-1/2” I.D.	AR

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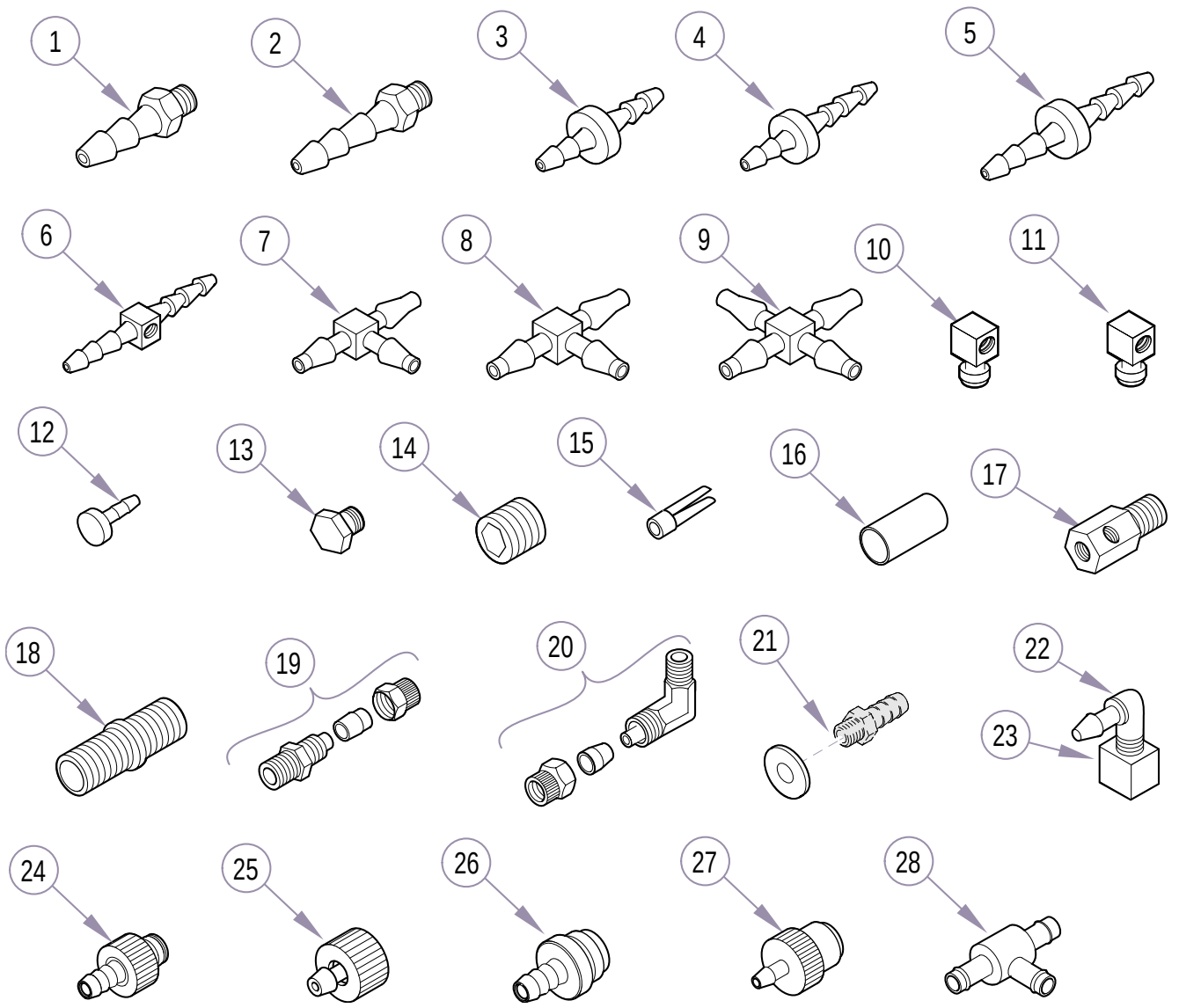
Connectors & Fittings



KA963402i

Item	Part No.	Description	Qty
1	109714	Connector, #10-32 to 1/8” O.D. Tube	AR
2	117349	Connector, #10-32 to 1/4” O.D. Tube	AR
3	117481	Barb Fitting, 1/8” to 1/8” O.D Tube	AR
4	117739	Barb Fitting, 1/8” to 1/4” O.D. Tube	AR
5	117482	Barb Fitting, 1/4” to 1/4” O.D. Tube	AR
6	117483	Barb Fitting, 1/4” to 1/4” O.D. Tube w/Female #10-32 Threads	AR
7	117477	Barb Tee, 3-Way for 1/8” O.D. Tubes	AR
8	117478	Barb Tee, 3-Way for 1/4” O.D. Tubes	AR
9	014-0388-00	Barb Tee, 4-Way for 1/16” O.D. Tubes	AR
10	113295	Control Valve Fitting w/0.062” Orifice, One Female & One Male w/#10-32 NF-2 Threads	AR
11	120361-2	Tee, Two Female & One Male w/#10-32 NF-2 Threads	AR
12	118915	Plug, For 1/8” O.D. Tube	AR
13	117351	Brass Plug, #10-32 Threads	AR
14	117662	Brass Plug, 1/8-27 NPTF Pipe	AR
15	117479	Uni-Clamp, 1/8” O.D. Tube	AR
16	117480	Sleeve Clamp, 1/4” O.D. Tube	AR
17	117352	4-Way Tee, Three #10-32 Female Threads & One Male 1/8-27 NPT Thread	AR
18	P16629	Nipple connector, 1/8-27 NPT	AR
19	121084	Male Connector, 1/4” O.D. Tube to 1/8”-27 MPT	AR
20	137909	Male Elbow, 3/8” O.D. Tube to 1/8-27 MPT	AR
21	117660	Gasket, Sealing	AR
22	105547	Waste Elbow	AR
23	111506	Adapter	AR
24	029-2540-00	Male Coupler, 1/4”	AR
25	029-2541-00	Male Coupler, 1/8”	AR
26	057-0542-00	Female Coupler, 1/4”	AR
27	057-0546-00	Female Coupler, 1/8”	AR
27	122743	Barb Tee, 3-Way for 3/16” O.D. Tubes	AR

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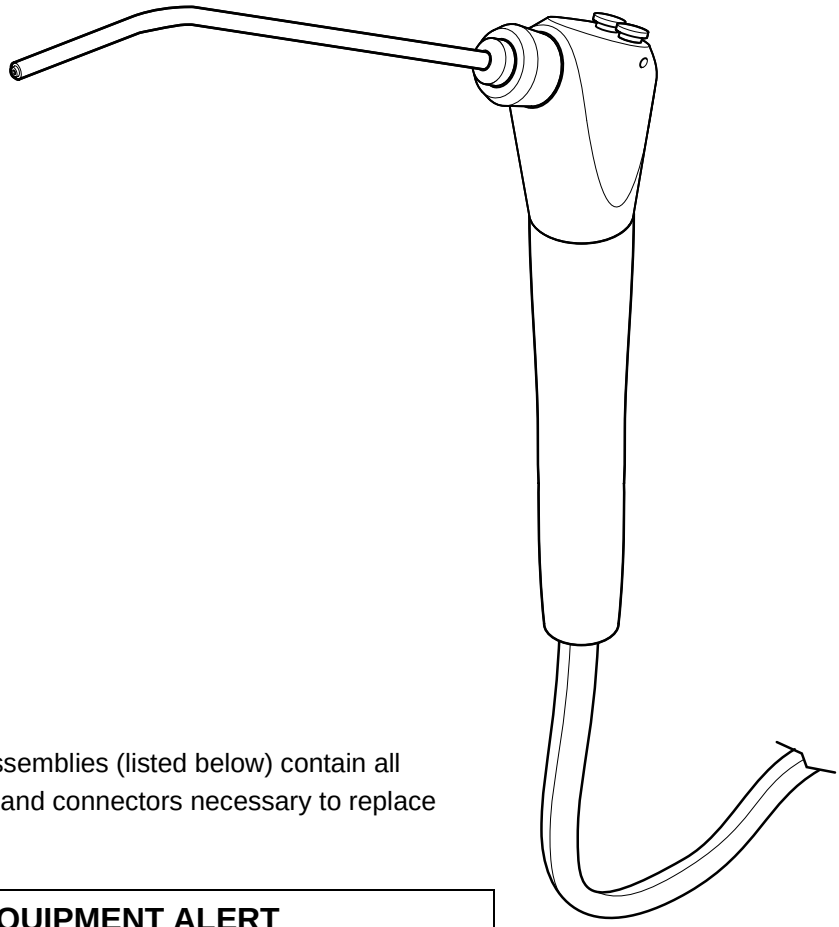
Syringe Assemblies w/Tubing *(Unheated & Heated)*



NOTE:
The syringe assemblies (listed below) contain all tubing, wiring, and connectors necessary to replace the syringe.

EQUIPMENT ALERT
Heated syringe tubing is slightly longer than standard handpiece tubing. **Do not attempt to shorten tubing**. The entire length of tubing is necessary for proper function of the heated syringe. *[Resistance measured across Molex connector **must** be 10±1 ohms @ 77° F (25° C)].*

KA977500

Part No.	Description	Qty
	Doctor's Syringe w/Tubing: for Chair, Wall, & Cabinet Mtd. Units	
029-2611-00	Unheated Syringe	1
029-2612-00	Heated Syringe	1
	for 12:00 Casework Mtd. Units	
029-2808-00	Unheated Syringe	1
029-2809-00	Heated Syringe *(incl. wiring harness listed below)*	1
• 015-1567-00	• Heated Syringe Wiring Harness	1

Part No.	Description	Qty
	Assistant's Syringe w/Tubing: for Chair, Wall, & Cabinet Mtd. Units	
029-2561-00	Unheated Syringe	1
029-2568-00	Heated Syringe	1
	for 12:00 Casework Mtd. Units	
029-2808-01	Unheated Syringe	1
029-2810-00	Heated Syringe	1
	For parts breakdown of syringe, refer to Syringe Assembly Components	Ref

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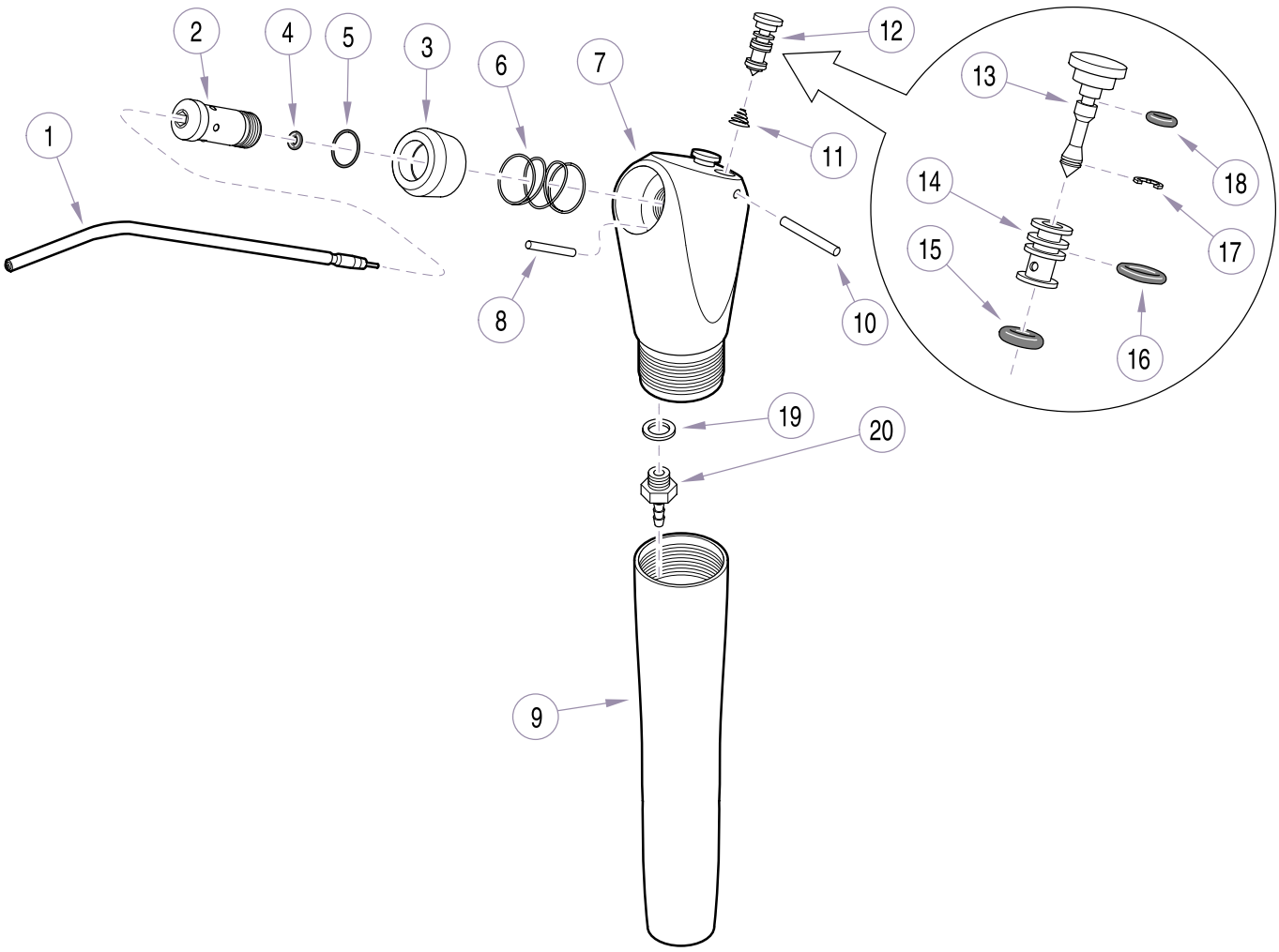
Syringe Assembly Components



KA926201i

Item	Part No.	Description	Qty
	120795	Quick Clean Standard Syringe (includes items 1 thru 20)	
1	• 120514	• Syringe Tip	1
2	•	• Tip Adapter Assembly (DCI# 3065) (Includes Item 3)	1
3	• •	• • Tip Collar	1
4	•	• O-Ring (pkg of 12) (DCI# 2255)	1
5	•	• O-Ring (pkg of 12) (DCI# 2202)	1
6	•	• Spring, Tip Adapter (DCI# 9677)	1
7	•	• Syringe Body	1
8	•	• Pin, Tip Adapter (DCI#9659)	1
9	•	• Handle, Syringe (DCI# 3491)	1
10	•	• Pin (DCI# 9648)	1
11	•	• Spring, Syringe Button (DCI# 9670)	1
12	• 152055	• Button Cartridge Kit (Includes Items 13 Thru 18) Note: This kit Includes Two 120903 Button Cartridges	1
13	• •	• • Button Valve	2
14	• •	• • Valve	2
15	• •	• • O-Ring (Pkg of 12) (DCI# 2203)	2
16	• •	• • O-Ring (Pkg of 12) (DCI# 2212)	2
17	• •	• • Retaining Ring (DCI# 9601)	2
18	• •	• • O-Ring (Pkg of 12) (DCI# 2211)	2
19	• 117660	• Gasket, Sealing	2
20	•	• Barb Fitting (Pkg of 10) (DCI# 0084)	2

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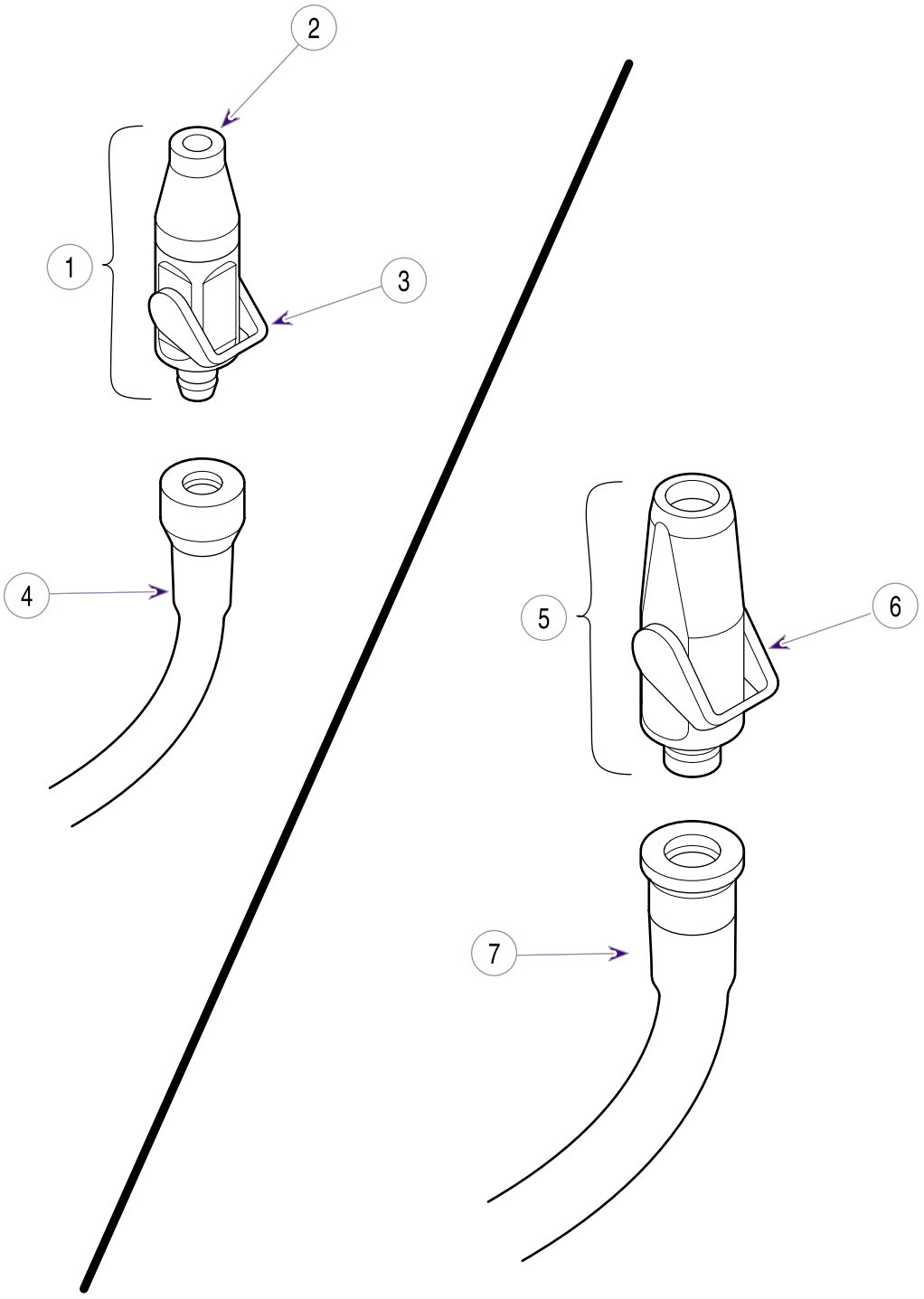
Saliva Ejector/HVE Valve Components



KA9398001

Item	Part No.	Description	Qty
1	029-2648-00	Saliva Ejector Valve (Includes items 2 & 3)	1
2	• 121317	Replacement Tip	1
3	• 121045	Lever - Saliva Ejector	1
4	S059-00127	Tubing (Qty=feet required)	AR
5	121041	HVE Hndpc. Valve (Includes item #6)	1
6	• 121046	• Lever - HVE Valve	1
7	• S059-00128	• Tubing (Qty=feet required)	AR

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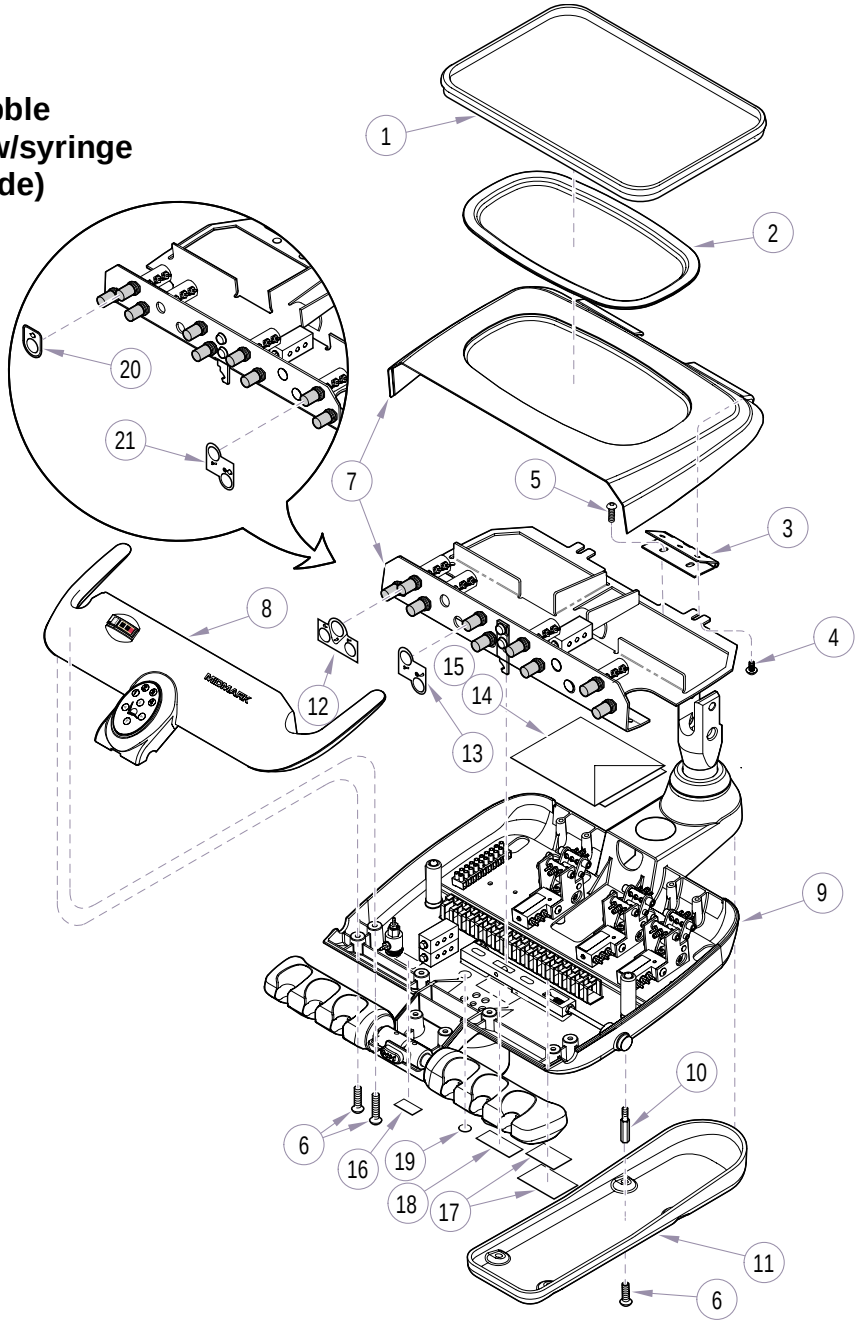
ProCenter Delivery Unit Assembly

Labels shown in bubble are used on units w/syringe in #6 Position (RH side)



KA937403i

Item	Part No.	Description	Qty
	029-2448-00	Delivery Unit Assembly (includes items 1 thru 12)	1
1	• 116599	• Tray	1
2	• 053-1120-00	• Instrument Head Tray Pad	2
3	• 016-0870-50	• Hinge	2
4	• P17928-2	• Screw	4
5	• 040-0010-145	• Screw	4
6	• 040-0010-74	• Screw	12
7	•	• Lid Sub-Assembly (Refer to "ProCenter Lid Sub-Assembly")	Ref
8	•	• Top Sub-Assembly (Refer to "ProCenter Top Sub-Assembly")	Ref
9	•	• Base Sub-Assembly (Refer to "ProCenter Base Sub-Assembly")	Ref
10	• 015-0599-04	• Standoff	2
11	• 053-1178-00	• Doctor Instrument Head Bottom Cover	1
12	061-0777-00	Water/Air Syringe Label	1
13	061-0776-00	Water/Air Instrument Head Label	1
14	016-0082-01	Vinyl Label Pouch	1
15	003-1131-00	Instrument Head Flow Diagram	1
16	TPW1493	Flush System Label	1
17		Serial Number Label	1
	061-0666-00	Clear Laminate	1
18	061-0735-00	ETL Label	1
19	061-0652-00	Type B Equipment Label	1
20	061-0821-00	Air Control Label (Used when Syringe is located in #6 -RH Position)	1
21	061-0822-00	Position #6 Syringe Label (Used when Syringe is located in #6 -RH Position)	1

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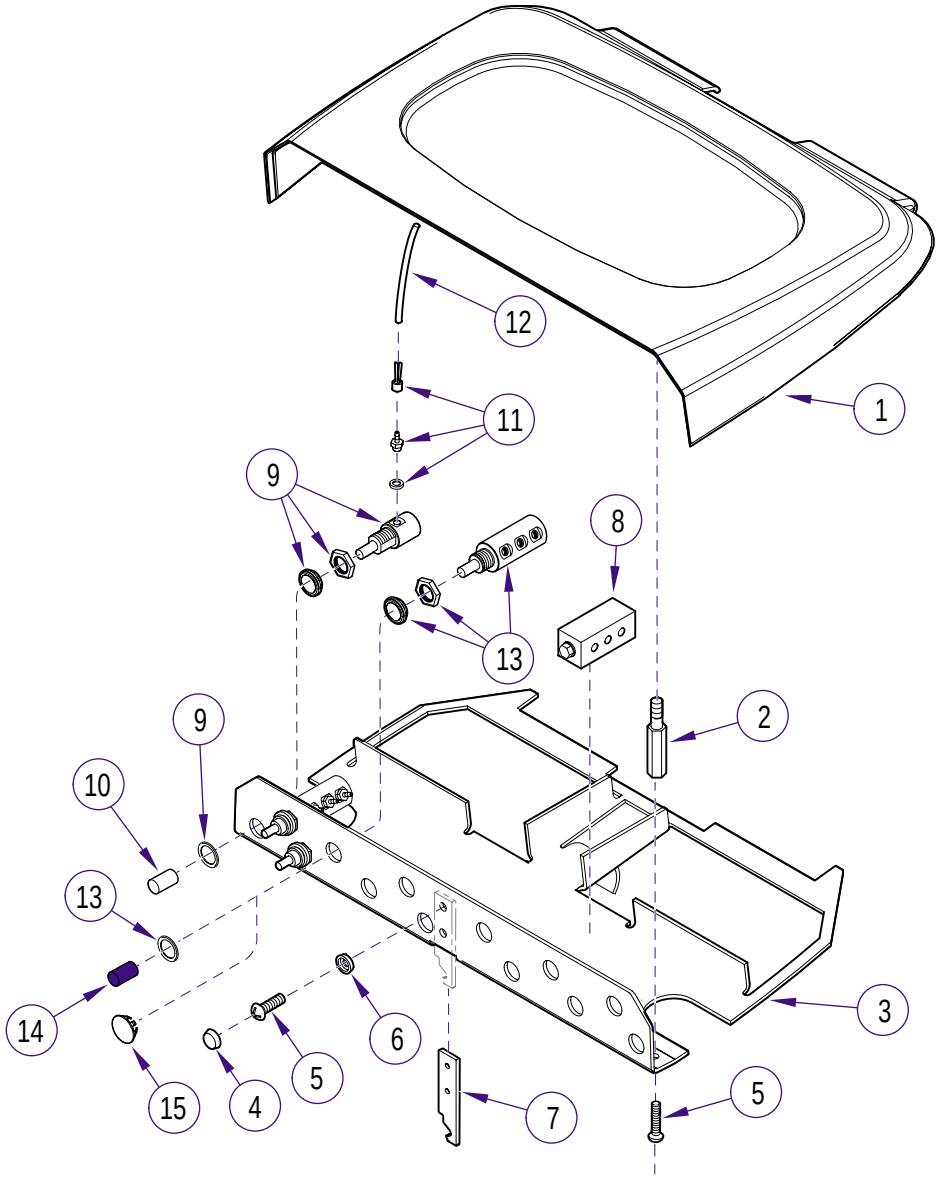
ProCenter Lid Sub-Assembly



NOTE:
Lid Support Field Install Kit **(002-0686-00)** is available for older units manufactured without lid support rod.

KA937900i

Used on Units with Serial Numbers NV1000 Thru NV1119

Item	Part No.	Description	Qty
	029-2446-00	ProCenter Lid Sub-Assembly (includes items 1 thru 12)	1
1	• 053-1091-01	• Instrument Head Lid	1
2	• 015-0599-04	• Standoff	2
3	• 050-4868-50	• Instrument Lid Cover	1
4	• 053-1188-00	• Screw Cover Top	2
5	• P17928-2	• Screw	4
6	• 053-1187-00	• Screw Cover Base	2
7	• 050-4907-50	• Middle Bracket	1
8	• 029-2585-00	• Manifold Assy. (Includes Mtg. Tape)	2
	• • 275184	• • Foam Mtg. Tape (Sold by the foot)	1/8
9	• 029-2449-01	• Air Control Valve	AR
10	• 053-1165-00	• Fluted Control Knob	AR
11	•	• Connector (Refer to "Connectors & Fittings")	AR
12	•	• Tubing (Refer to "Internal Tubing")	AR
13	029-2450-00	Water Control Valve	AR
14	053-1165-01	Blue Fluted Control Knob	AR
15	121969-50	Hole Plug	AR

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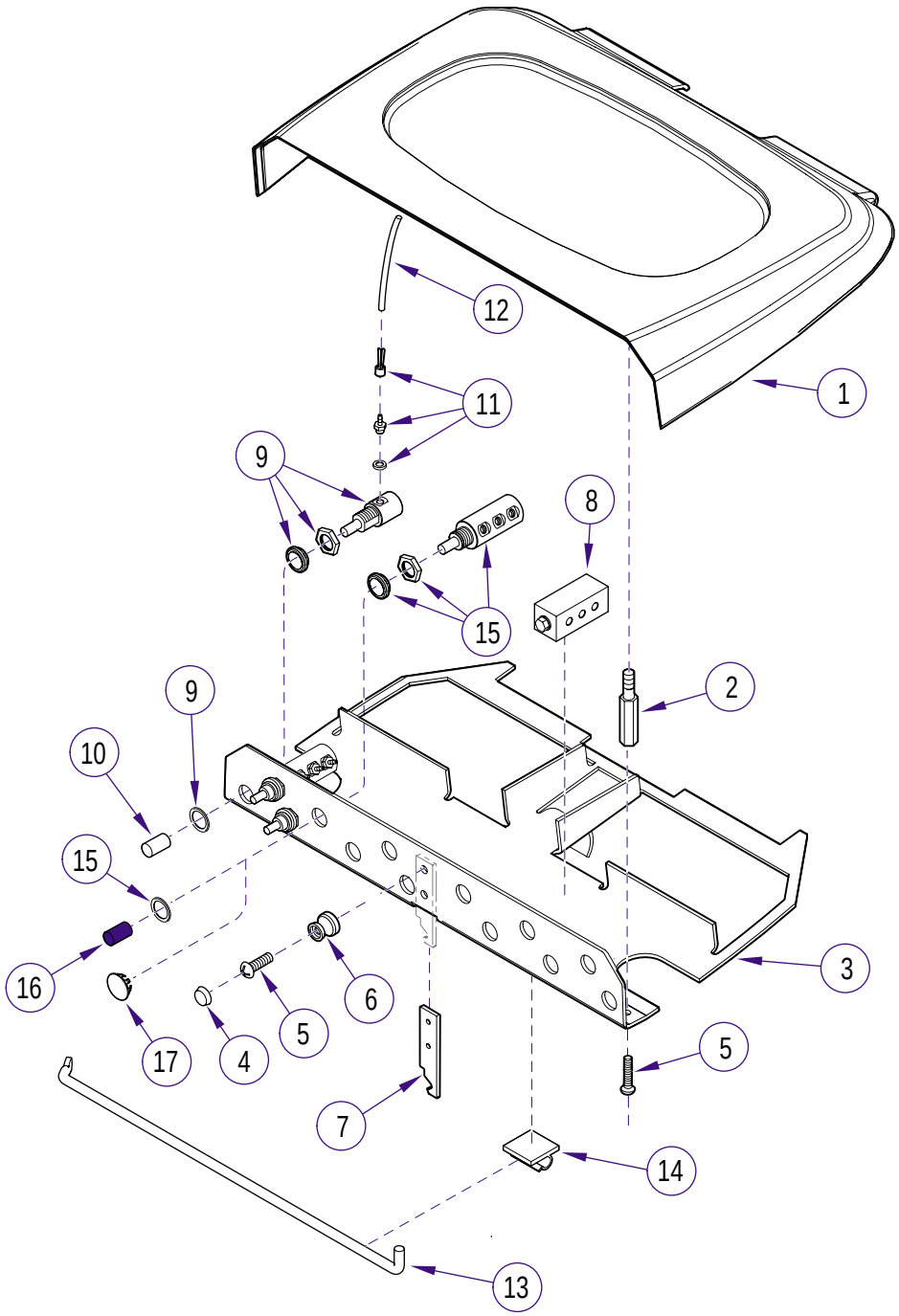
ProCenter Lid Sub-Assembly



KA937901i

Used on Units with Serial Numbers NV1120 thru NV2995 & RF1000 thru RF1090

Item	Part No.	Description	Qty
	029-2446-00	ProCenter Lid Sub-Assembly (includes items 1 thru 14)	1
1	• 053-1091-01	• Instrument Head Lid	1
2	• 015-0599-04	• Standoff	3
3	• 050-5026-50	• Instrument Lid Cover	1
4	• 053-1188-00	• Screw Cover Top	2
5	• P17928-2	• Screw	4
6	• 053-1187-00	• Screw Cover Base	2
7	• 050-4907-50	• Middle Bracket	1
8	• 029-2585-00	• Manifold Assy. (Includes Mtg. Tape)	2
	• • 275184	• • Foam Mtg. Tape (Sold by the foot)	1/8

Item	Part No.	Description	Qty
9	• 029-2449-01	• Air Control Valve	AR
10	• 053-1165-00	• Fluted Control Knob	AR
11	•	• Connector (Refer to "Connectors & Fittings")	AR
12	•	• Tubing (Refer to "Internal Tubing")	AR
13	• 057-0645-50	• Lid Support Rod	1
14	• 118167	• Clamp	1
15	029-2450-00	Water Control Valve	AR
16	053-1165-01	Blue Fluted Control Knob	AR
17	121969-50	Hole Plug	AR

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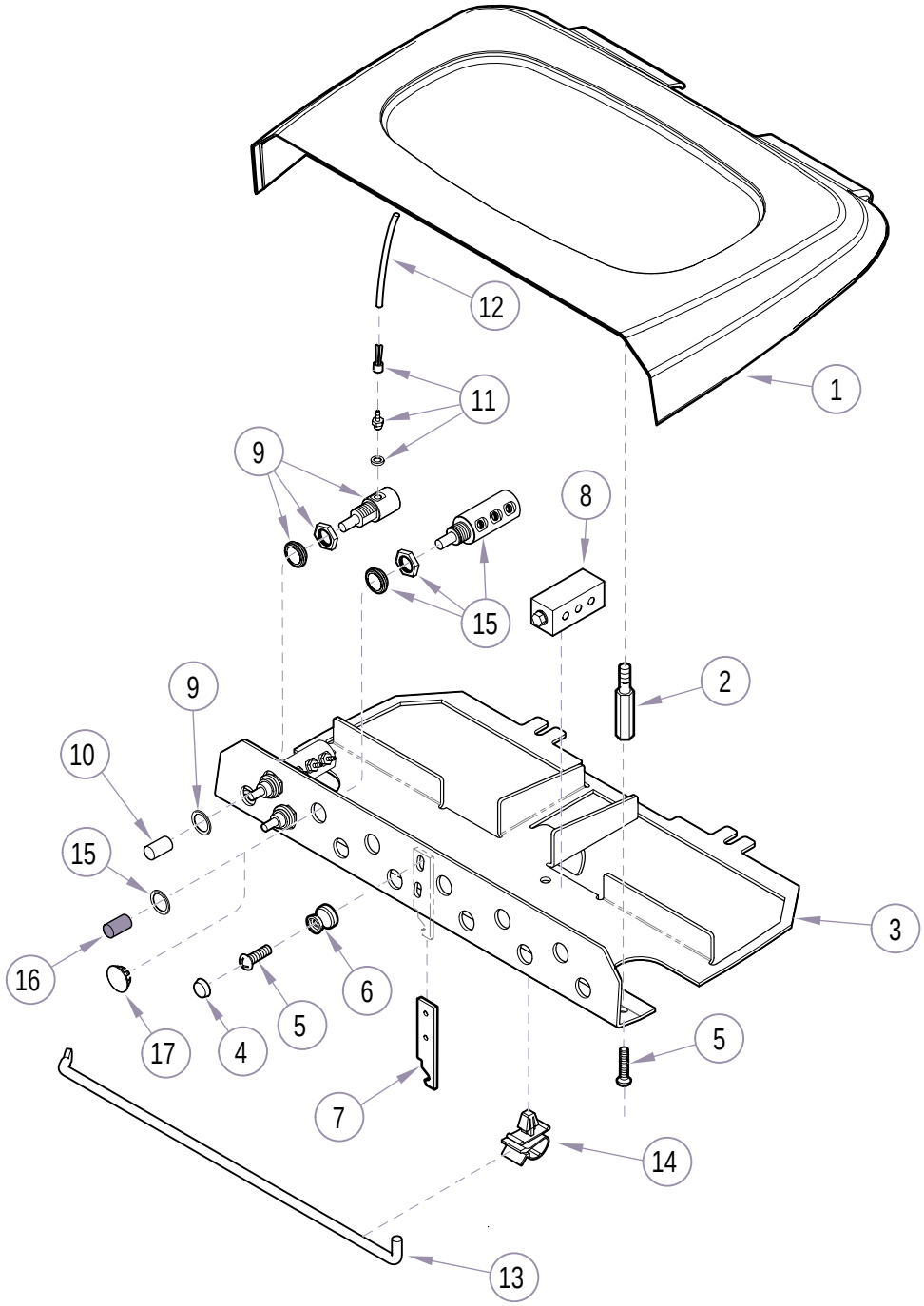
ProCenter Lid Sub-Assembly



KA937903i

Used on Units with Serial Numbers NV2996 & RF1091 thru Present

Item	Part No.	Description	Qty
	029-2446-00	ProCenter Lid Sub-Assembly (includes items 1 thru 14)	1
1	• 053-1091-01	• Instrument Head Lid	1
2	• 015-0599-04	• Standoff	3
3	• 050-5670-50	• Instrument Lid Cover	1
4	• 053-1188-00	• Screw Cover Top	2
5	• P17928-2	• Screw	4
6	• 053-1187-00	• Screw Cover Base	2
7	• 050-4907-50	• Middle Bracket	1
8	• 029-2585-00	• Manifold Assy. (Includes Mtg. Tape)	2
	• • 275184	• • Foam Mtg. Tape (Sold by the foot)	1/8
9	• 029-2449-01	• Air Control Valve	AR
10	• 053-1165-00	• Fluted Control Knob	AR
11	•	• Connector (Refer to "Connectors & Fittings")	AR
12	•	• Tubing (Refer to "Internal Tubing")	AR
13	• 057-0645-50	• Lid Support Rod	1
14	• 053-1354-00	• Clamp	1
15	029-2450-00	Water Control Valve	AR
16	053-1165-01	Blue Fluted Control Knob	AR
17	121969-50	Hole Plug	AR

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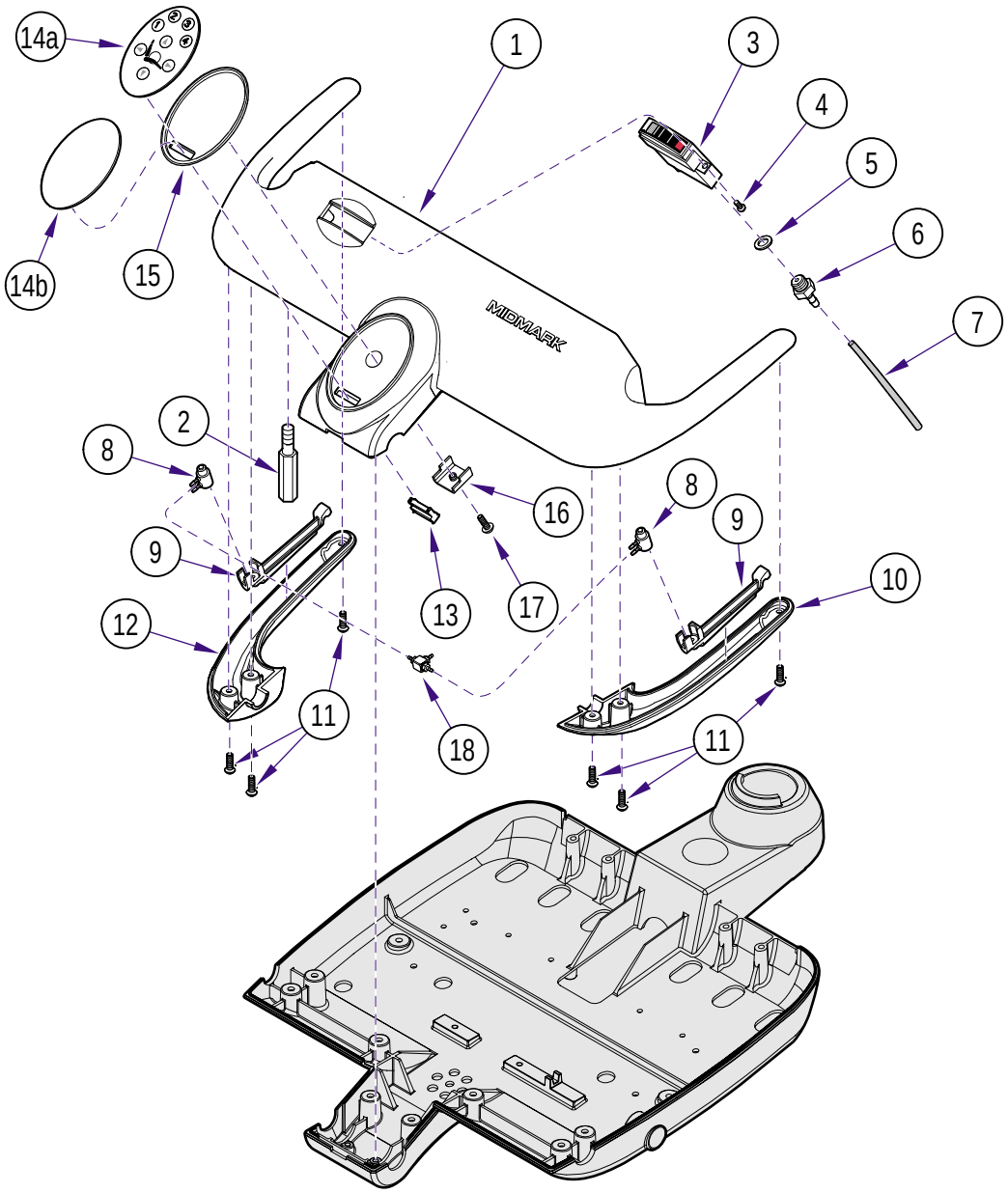
ProCenter Top Sub-Assembly



KA948801i

Item	Part No.	Description	Qty
	029-2447-00	ProCenter Top Sub-Assembly (includes items 1 thru 12)	1
1	• 053-1090-01	• Instrument Top Housing	1
2	• 015-0599-04	• Standoff	8
3	• 016-0839-00	• Air Pressure Gauge	1
4	• 042-0168-00	• Screw	2
5	• P12575	• Washer	1
6	•	• Connector (Refer to "Connectors & Fittings")	AR
7	•	• Tubing (Refer to "Internal Tubing")	AR
8	• 120910	• 3-way Valve	2
9	• 053-1138-01	• Switch Lever Handle	2
10	• 053-1133-02	• R. H. Lower Handle	1
11	• 040-0006-103	• Screw	6
12	• 053-1133-03	• L. H. Lower Handle	1
13	015-1324-00	90 Degree Connector	1
14a	002-0672-01	Switch Panel (incl. item 15)	1
14b	029-2607-00	Blank Panel (incl. item 15)	1
15	053-1071-01	Control Bezel	1
16	050-4980-00	Bezel Bracket	1
17	040-0006-103	Screw	1
18	029-2544-00	Shuttle Valve	1

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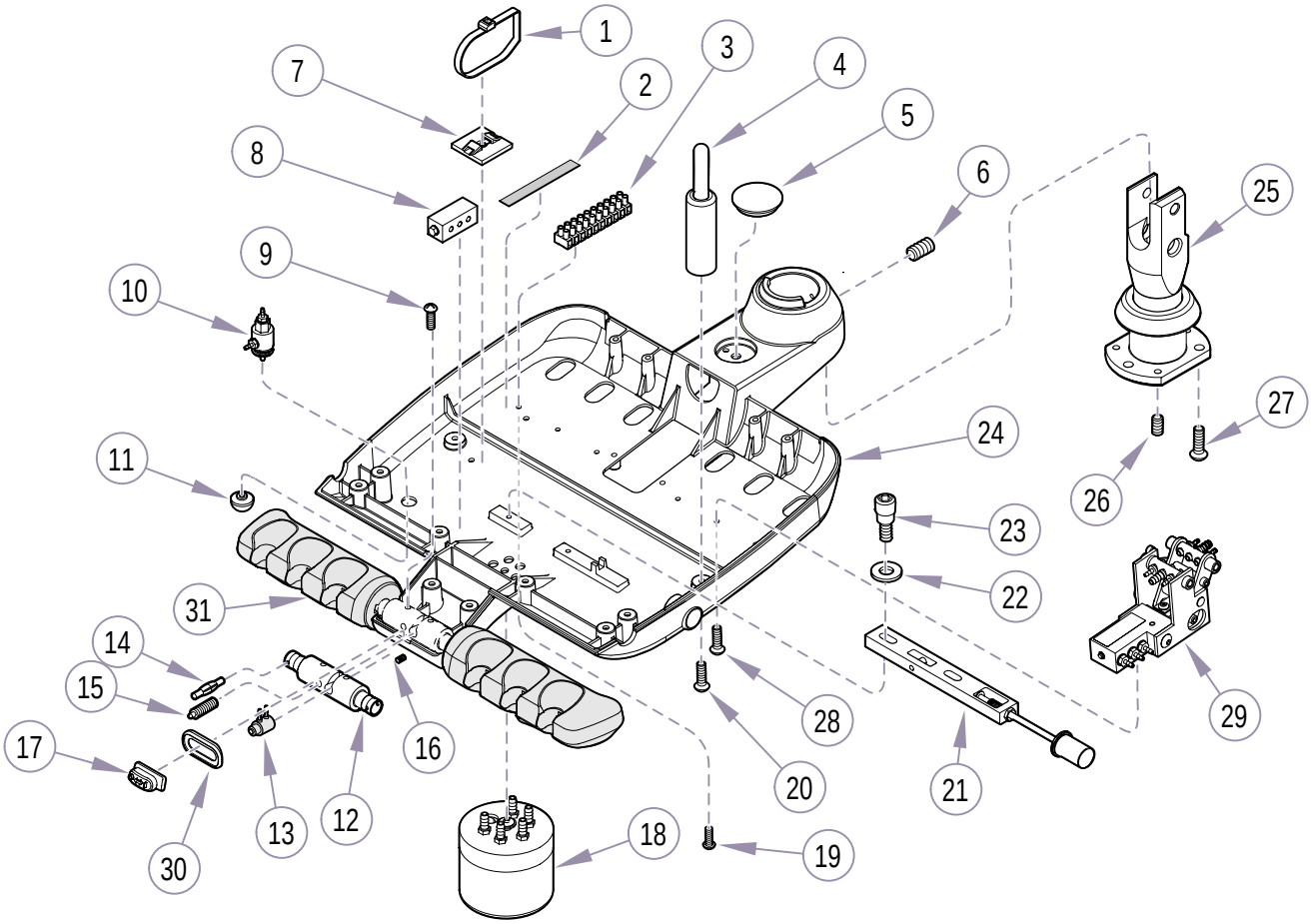
ProCenter Base Sub-Assembly



KA937204i

Used on units with Serial Numbers NV1000 thru NV1280

Item	Part No.	Description	Qty
	029-2445-00	ProCenter Base Sub-Assembly *(includes items 1 thru 26)*	1
1	• 102308	• Cable Tie	3
2	• 061-0795-00	• Terminal Strip Label	1
3	• 015-1457-00	• Terminal Block	1
4	• 029-2554-00	• Lift Assembly	2
5	• 120960-50	• Hole Plug *(apply adhesive #185057)*	1
6	• 122162	• Set Screw	1
7	• 123058	• Cable Tie Mounting Platform	3
8	• 029-2585-00	• Manifold Assy. *(incl. mtg. tape)*	1
	• • 275184	• • Foam Mtg. Tape	0.125 ft.
9	• 040-0010-149	• Screw	2
10	• 029-2453-00	• Purge Control Valve	1
11	• 029-2529-00	• Valve Knob *(incl. set screw)*	1
	• • P11836	• • Set Screw	1
12	• 051-0913-00	• Instrument Holder Connector	1
13	• 120910	• 3-way Valve	1
14	• 042-0043-13	• Groove Pin	2
15	• 025-0064-00	• Spring Plunger	1
16	• 121488	• Set Screw	1
17	• 053-1123-01	• Master Switch	1
18	•	• Refer to: "ProCenter Air / Oil Separator Assembly"	Ref.
19	• 040-0006-80	• Screw	2
20	• 040-0010-11	• Screw	2
21	•	• Refer to: "ProCenter Lid Release Assembly"	Ref.
22	• 053-0382-01	• Nylon Washer	2
23	• 042-0014-22	• Shoulder Bolt	2
24	• 020-0205-50	• Instrument Head Base	1
25	•	• Refer to: "ProCenter Bearing Components"	Ref.
26	• 040-0250-60	• Set Screw	3
27	• 040-0250-13	• Bolt	3
28	040-0006-73	Screw	AR
29		Refer to: "Procenter Kink Valve Assembly"	AR
30	053-1204-00	Master Switch Gasket	1
31		Refer to: "ProCenter Instrument Holder Assembly"	Ref

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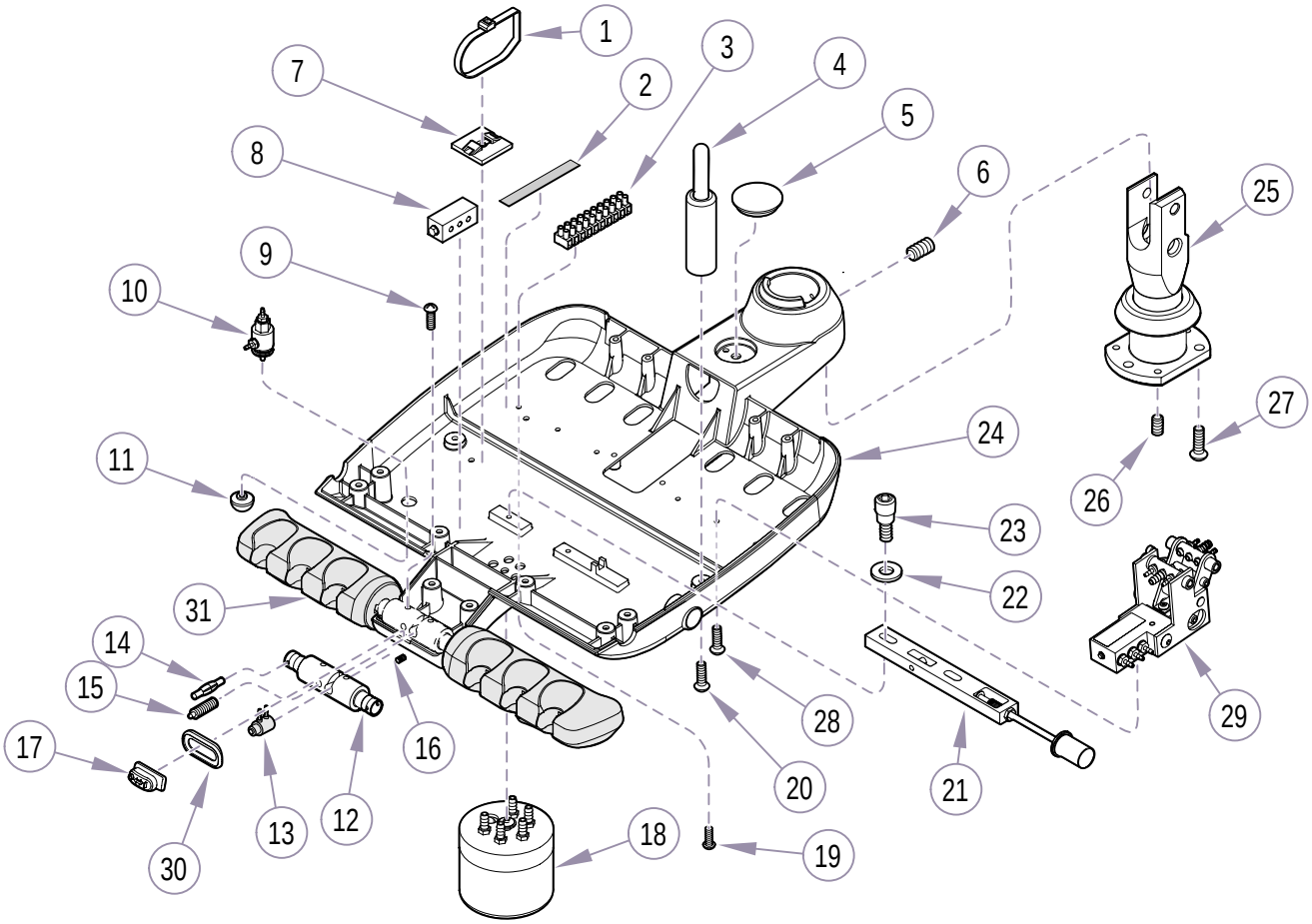
ProCenter Base Sub-Assembly



KA937204i

Used on units with Serial Numbers NV1281 & RF1000 thru present

Item	Part No.	Description	Qty
	029-2445-00	ProCenter Base Sub-Assembly *(includes items 1 thru 26)*	1
1	• 102308	• Cable Tie	3
2	• 061-0795-00	• Terminal Strip Label	1
3	• 015-1457-00	• Terminal Block	1
4	• 029-2554-00	• Lift Assembly	2
5	• 120960-50	• Hole Plug *(apply adhesive #185057)*	1
6	• 122162	• Set Screw	1
7	• 123058	• Cable Tie Mounting Platform	3
8	• 029-2585-00	• Manifold Assy. *(incl. mtg. tape)*	1
	• • 275184	• • Foam Mtg. Tape	0.125 ft.
9	• 040-0010-149	• Screw	2
10	• 029-2453-00	• Purge Control Valve	1
11	• 029-2529-00	• Valve Knob *(incl. set screw)*	1
	• • P11836	• • Set Screw	1
12	• 051-1030-00	• Instrument Holder Connector	1
13	• 120910	• 3-way Valve	1
14	• 042-0043-13	• Groove Pin	2
15	• 025-0064-00	• Spring Plunger	1
16	• 121488	• Set Screw	1
17	• 053-1123-01	• Master Switch	1
18	•	• Refer to: "ProCenter Air / Oil Separator Assembly"	Ref.
19	• 040-0006-80	• Screw	2
20	• 040-0010-11	• Screw	2
21	•	• Refer to: "ProCenter Lid Release Assembly"	Ref.
22	• 053-0382-01	• Nylon Washer	2
23	• 042-0014-22	• Shoulder Bolt	2
24	• 020-0205-50	• Instrument Head Base	1
25	•	• Refer to: "ProCenter Bearing Components"	Ref.
26	• 040-0250-60	• Set Screw	3
27	• 040-0250-13	• Bolt	3
28	040-0006-73	Screw	AR
29		Refer to: "Procenter Kink Valve Assembly"	AR
30	053-1204-00	Master Switch Gasket	1
31		Refer to: "ProCenter Instrument Holder Assembly"	Ref

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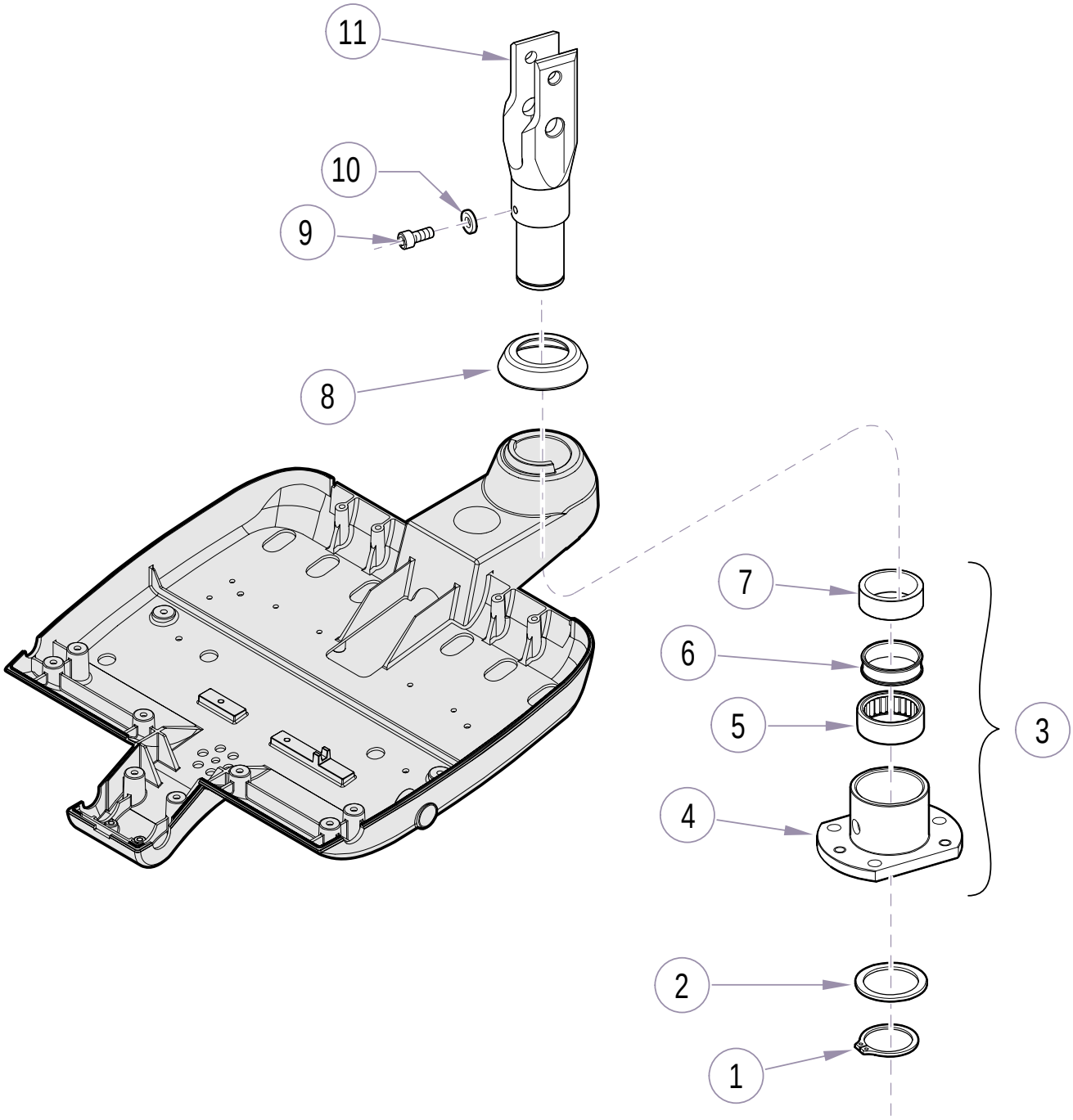
ProCenter Bearing Components



KA948900

Item	Part No.	Description	Qty
1	042-0056-04	Retaining Ring	1
2	053-1179-00	Thrust Washer	1
3	029-2560-00	ProCenter Bearing Assembly (Includes Items 4 thru 7)	1
4	• 057-0553-50	• Bearing Sleeve	1
5	• 016-0856-02	• Needle Bearing	1
6	• 057-0554-00	• Bearing Sleeve	1
7	• 016-0149-18	• Sleeve Bearing	1
8	053-1219-01	Doctors Instrument Head Trim Cover	1
9	040-0010-87	Screw	1
10	045-0001-124	Washer	1
11	052-0358-50	Movable Flex Arm Mount	1

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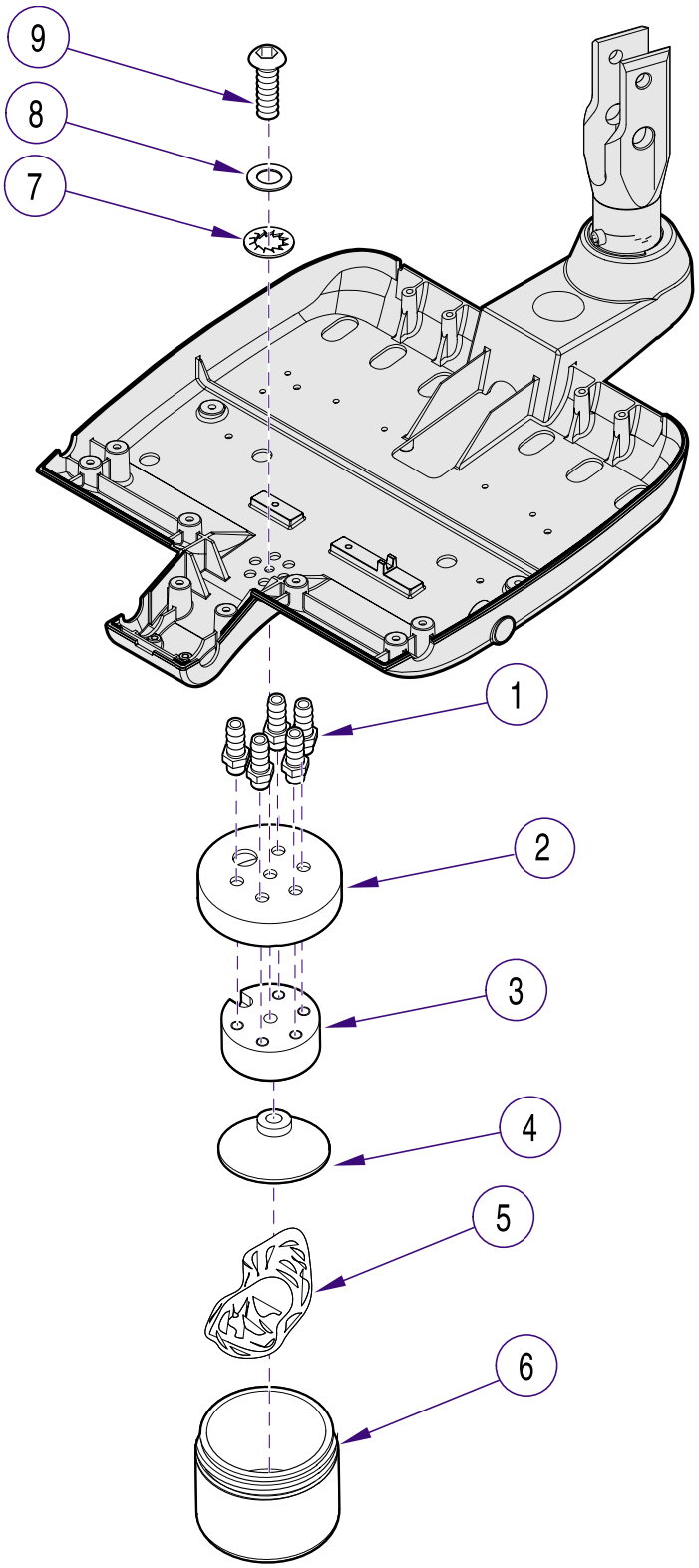
ProCenter Air / Oil Separator Assembly



KA949000

Item	Part No.	Description	Qty
	029-2451-00	ProCenter Air / Oil Separator Assembly (includes items 1 thru 9)	1
1	• 117349	• Barb Fitting	5
2	• 053-1096-00	• Separator Bottle Cap	1
3	• 053-1097-00	• Air/Oil Separator Manifold	1
4	• 120933	• Diffuser	1
5	• 121547	• Gauze Sponge	6
6	• 120937-5	• Bottle	1
7	• P12575	• Lock Washer	1
8	• P12572	• Washer	1
9	• 117601	• Screw	1

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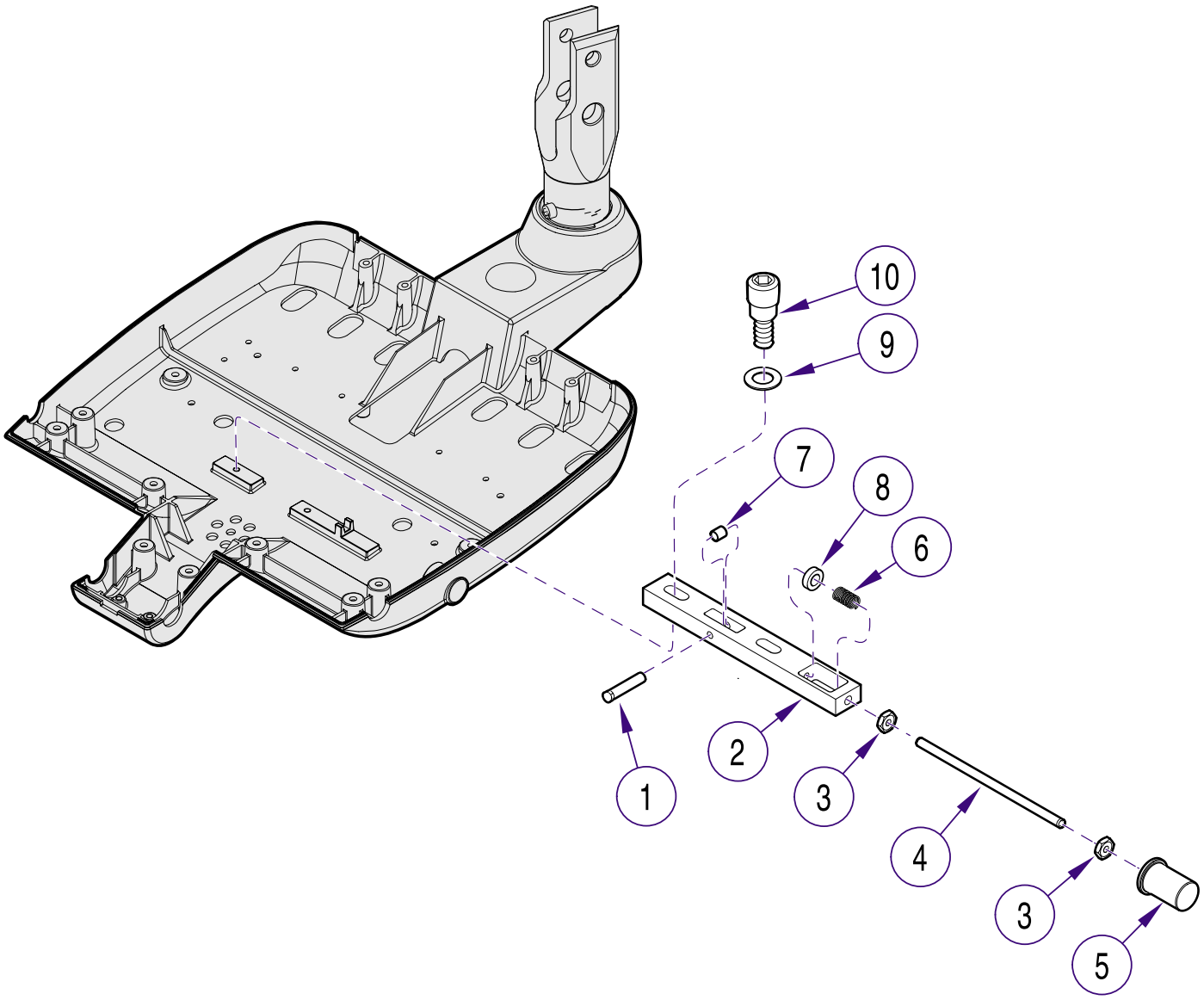
ProCenter Lid Release Assembly



KA949100

Item	Part No.	Description	Qty
	029-2559-00	Lid Release Assembly (includes items 1 thru 8)	1
1	• 042-0067-05	• Groove Pin	1
2	• 053-1142-00	• Slide Release	1
3	• 041-0010-00	• Nut	2
4	• 016-0875-00	• Trend Latch Rod	1
5	• 057-0614-00	• Stay Release Button	1
6	• 025-0042-08	• Compression Spring	1
7	• 016-0656-00	• Spacer	1
8	• 053-0382-00	• Washer	1
9		Washer (Refer to "ProCenter Base Sub-Assembly")	Ref
10		Shoulder Bolt (Refer to "ProCenter Base Sub-Assembly")	Ref

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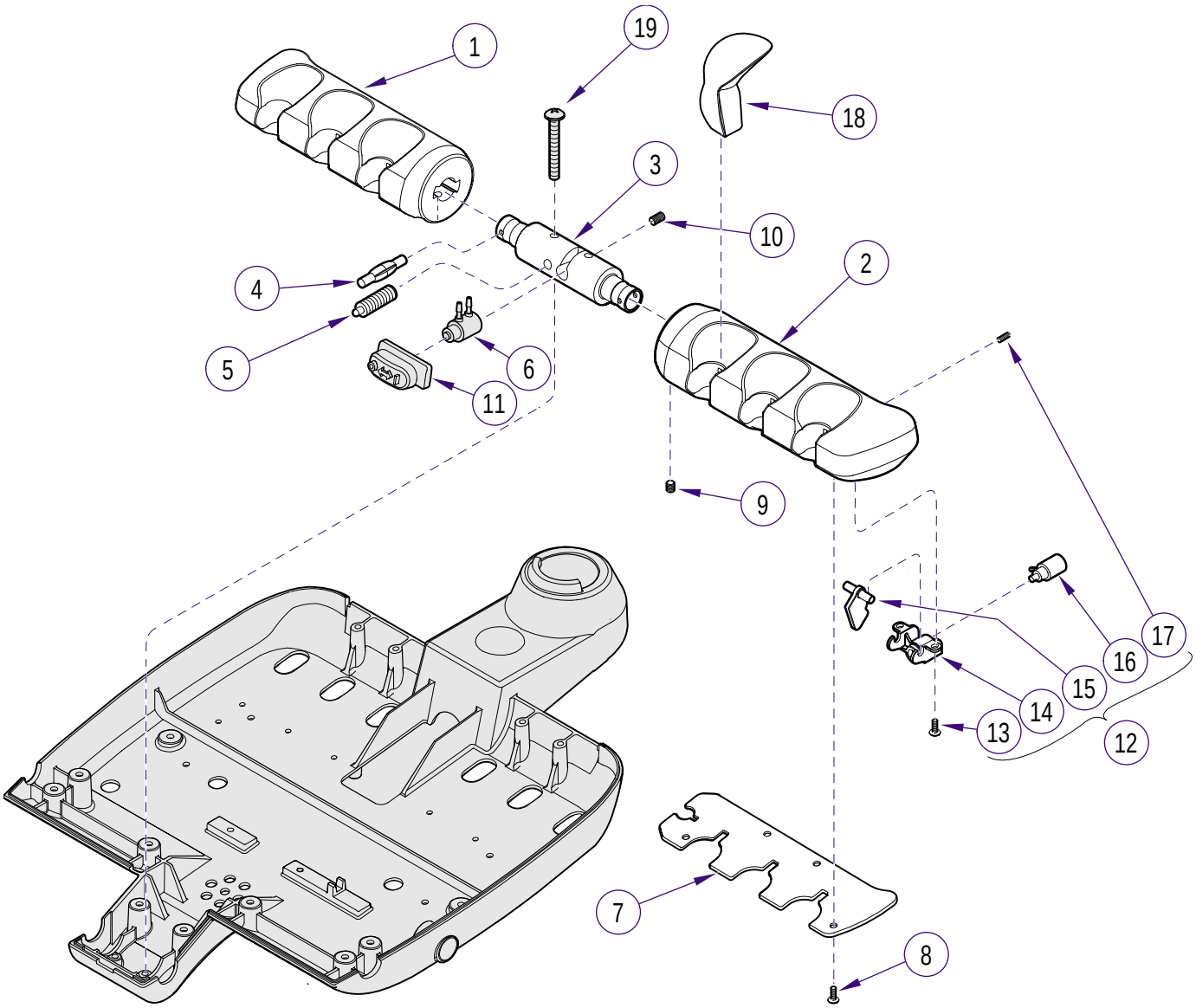
ProCenter Instrument Holder Components



KA938502i

Used on units with Serial Numbers NV1000 thru NV1012

Item	Part No.	Description	Qty
	029-2471-00	Instrument Holder Assembly *(includes items 1 thru 10)*	1
1	• 053-1113-01	• Instrument Holder (Left Side)	1
2	• 053-1113-00	• Instrument Holder (Right Side)	1
3	• 051-0913-00	• Instrument Holder Connector	1
4	• 042-0043-13	• Groove Pin	2
5	• 025-0064-00	• Spring Plunger	1
6	• 120910	• 3-way Valve	1
7	• 050-4869-50	• Bottom Cover	2
8	• 040-0006-98	• Screw	8
9	• 121482	• Set Screw	2
10	• 121488	• Set Screw	1
11		Refer to: "ProCenter Base Sub-Assembly"	
12	029-2470-00	Holder Actuator Assembly *(includes items 13 thru 17)*	AR
13	• 040-0006-98	• Screw	1
14	• 053-1115-00	• Actuator Block	1
15	• 053-1114-00	• Valve Actuator	1
16	• 120910	• 3 Way Valve	1
17	• P11836	• Set Screw	1
18	053-1139-00	Holder Position Plug	AR
19		Refer to: "ProCenter Base Sub-Assembly"	Ref

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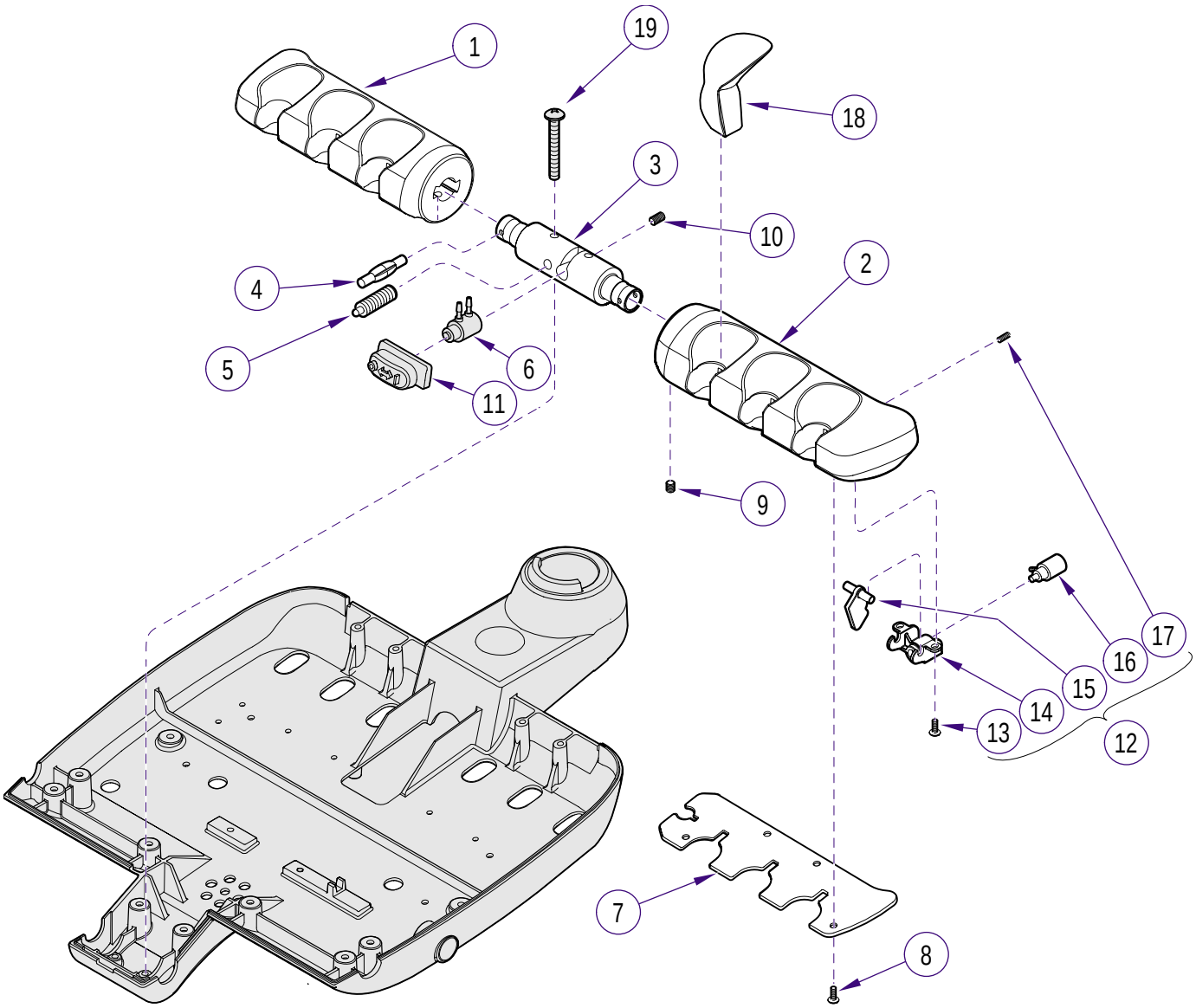
ProCenter Instrument Holder Components



KA938502i

Used on units with Serial Numbers NV1013 thru NV1280

Item	Part No.	Description	Qty
	029-2471-00	Instrument Holder Assembly *(includes items 1 thru 10)*	1
1	• 053-1202-01	• Instrument Holder (Left Side)	1
2	• 053-1202-00	• Instrument Holder (Right Side)	1
3	• 051-0913-00	• Instrument Holder Connector	1
4	• 042-0043-13	• Groove Pin	2
5	• 025-0064-00	• Spring Plunger	1
6	• 120910	• 3-way Valve	1
7	• 050-4869-50	• Bottom Cover	2
8	• 040-0006-98	• Screw	8
9	• 121482	• Set Screw	2
10	• 121488	• Set Screw	1
11		Refer to: "ProCenter Base Sub-Assembly"	
12	029-2470-00	Holder Actuator Assembly *(includes items 13 thru 17)*	AR
13	• 040-0006-98	• Screw	1
14	• 053-1115-00	• Actuator Block	1
15	• 053-1114-00	• Valve Actuator	1
16	• 120910	• 3 Way Valve	1
17	• P11836	• Set Screw	1
18	053-1203-00	Holder Position Plug	AR
19		Refer to: "ProCenter Base Sub-Assembly"	Ref

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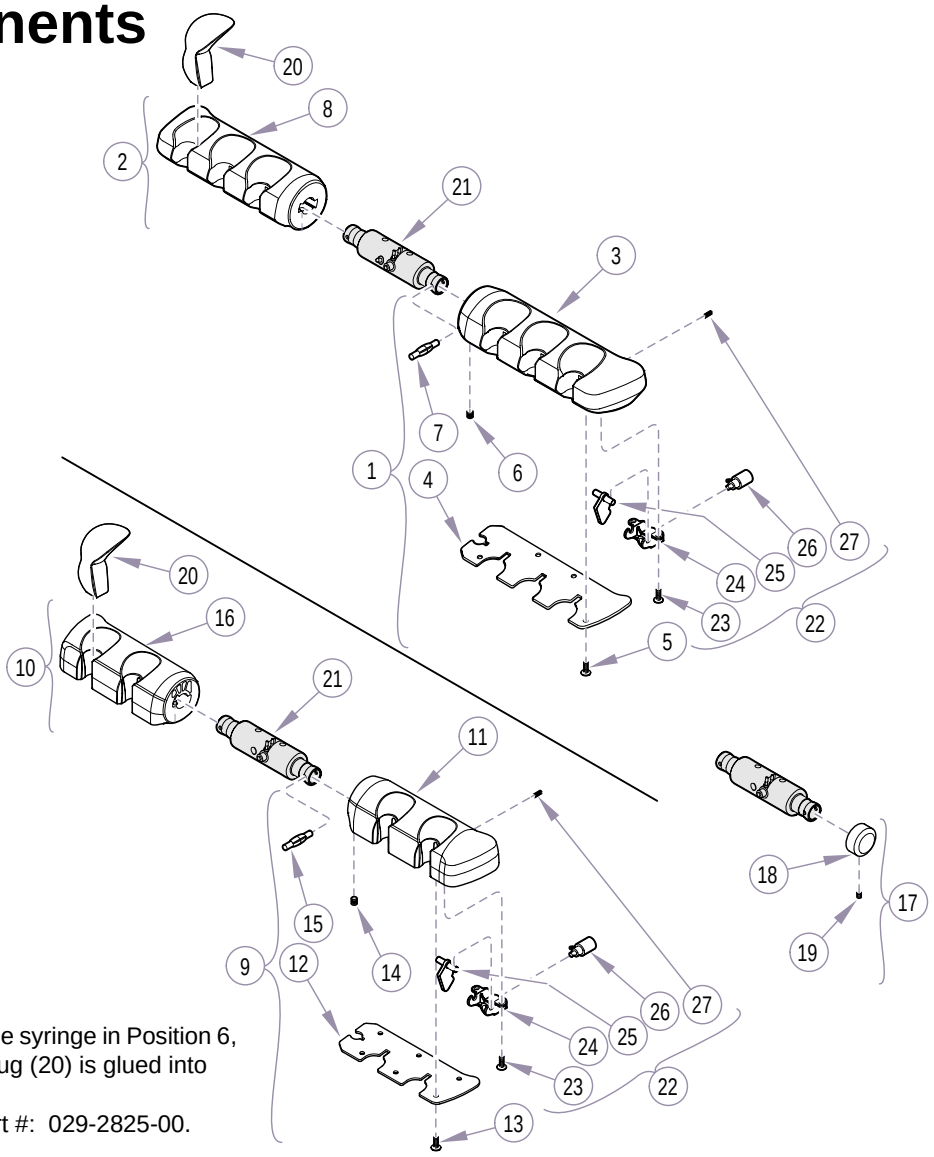
ProCenter Instrument Holder Components



Item #17 is used when only the LH or RH side of the instrument holder is ordered.

NOTE

If delivery unit has the syringe in Position 6, a Holder Position Plug (20) is glued into Position 1.
Plug w/adhesive part #: 029-2825-00.

DA131100i

Used on units with Serial Numbers NV1281, PZ1000, & RF1000 thru Present

Item	Part No.	Description	Qty
1	**029-3035-00**	**3-position, RH Holder Assy.** *(includes items 3 thru 7)*	1
2	**029-3035-01**	**3-position, LH Holder Assy.** *(includes items 4 thru 8)*	1
3	• 053-1209-04	• 3-position, RH Instrument Holder	1
4	• 050-5663-50	• 3-position Bottom Cover	1
5	• 042-0168-04	• Screw	6
6	• 040-0250-156	• Set Screw	1
7	• 042-0043-13	• Grooved Pin	1
8	• 053-1209-05	• 3-position, LH Instrument Holder	1
9	**029-3035-03**	**2-position, RH Holder Assy.** *(includes items 11 thru 15)*	1
10	**029-3035-04**	**2-position, LH Holder Assy.** *(includes items 12 thru 16)*	1
11	• 053-1344-00	• 2-position, RH Instrument Holder	1
12	• 050-5714-50	• 2-position Bottom Cover	1
13	• 042-0168-04	• Screw	6
14	• 040-0250-156	• Set Screw	1
15	• 042-0043-13	• Grooved Pin	1
16	• 053-1344-01	• 2-position, LH Instrument Holder	1

Item	Part No.	Description	Qty
17	**029-3035-02**	**Holder Bar Plug Assembly** *(includes items 10 & 11)*	AR
18	• 057-0724-50	• Bar Plug	1
19	• 040-0250-156	• Set Screw	1
20	053-1211-01	Holder Position Plug	AR
21		Refer to: "ProCenter Base Sub-Assembly"	Ref
		or "12:00 Casework Mtd. Procenter Delivery Unit"	Ref
22	**029-2470-00**	**Instrument Holder Actuator Assembly** *(includes items 23 thru 27)*	AR
23	• 042-0168-04	• Screw	2
24	• 053-1115-00	• Actuator Block	1
25	• 053-1114-00	• Valve Actuator	1
26	• 120910	• 3 Way Valve	1
27	• P11836	• Set Screw	1

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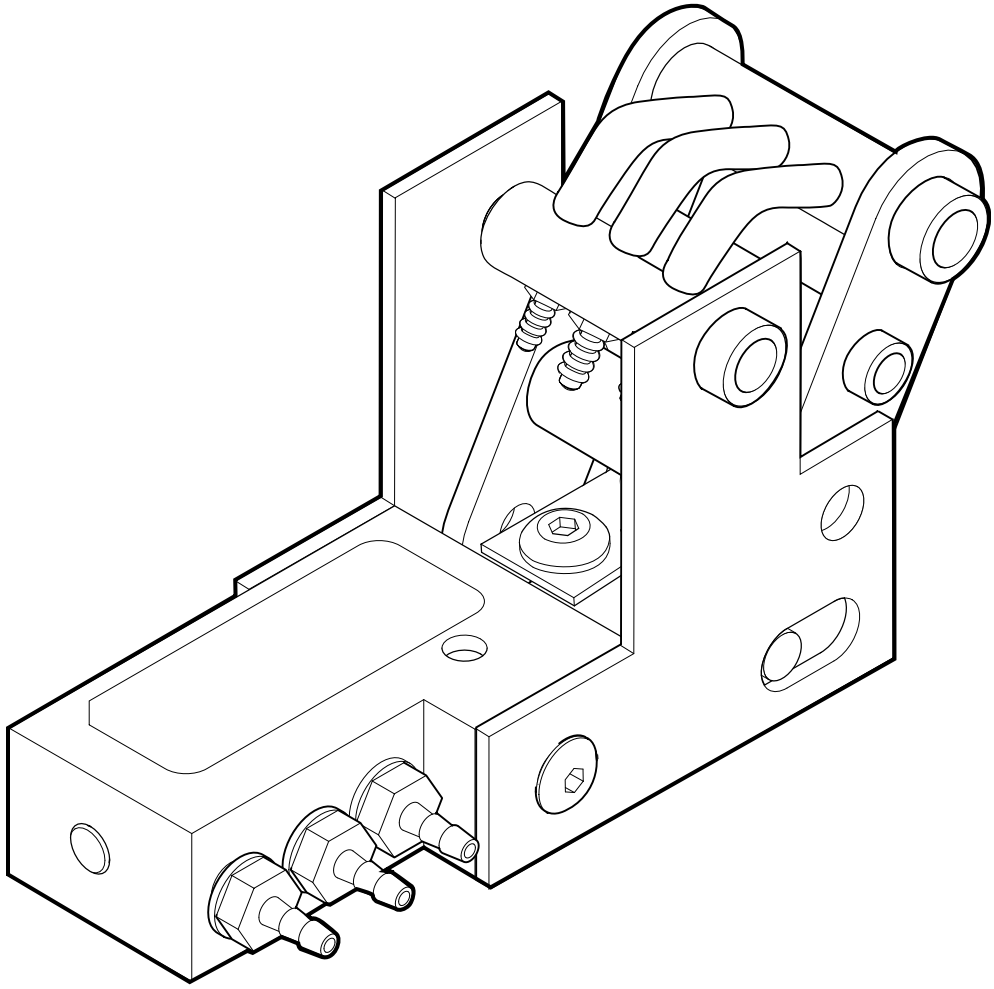
Procenter Kink Valve Assembly



DA111200i

Item	Part No.	Description	Qty	Item	Part No.	Description	Qty
	029-2429-00	Kink Valve Assembly *[Component parts not available]*	AR				

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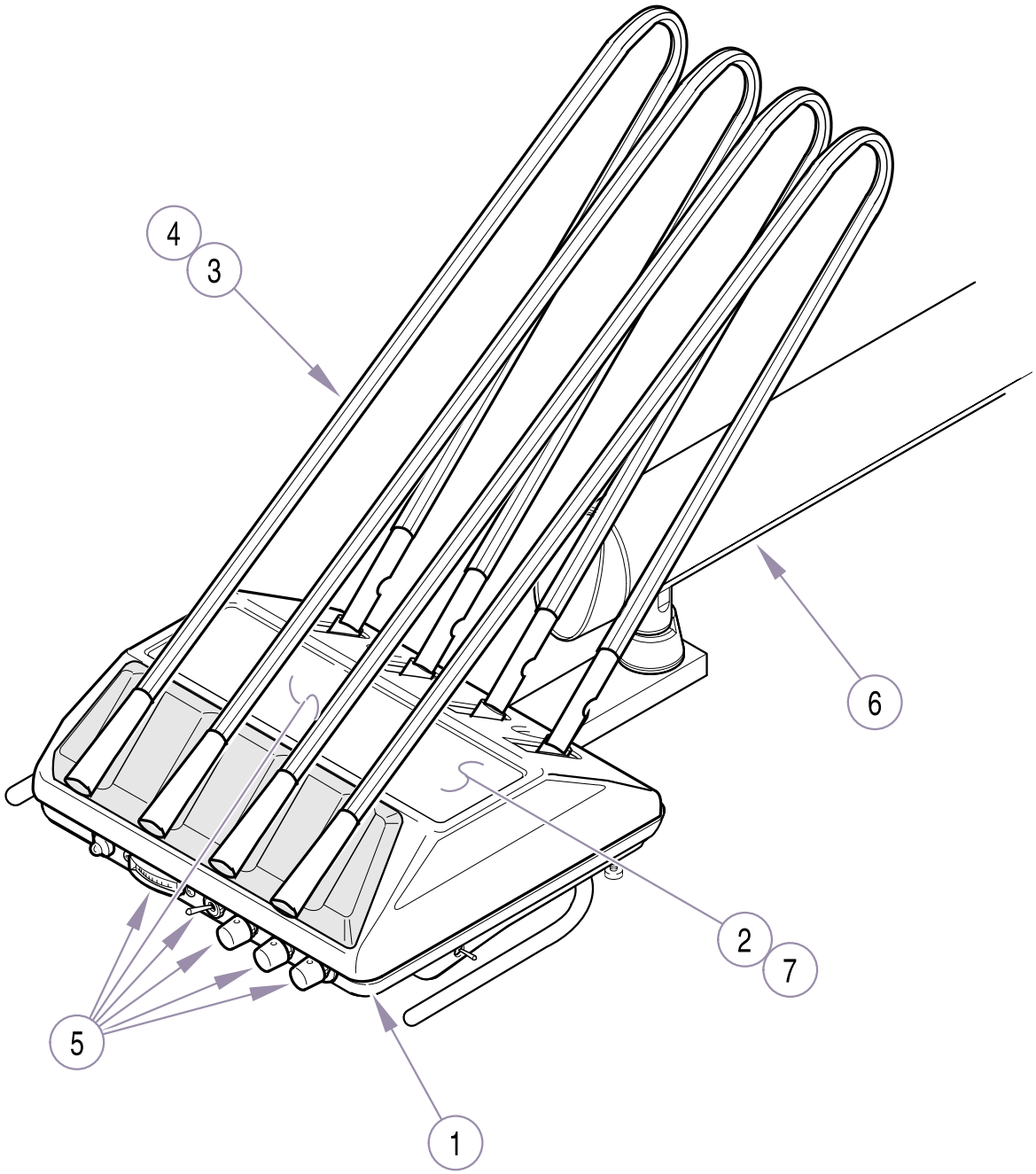
Whip Delivery Unit Assembly



KA982800i

Item	Part No.	Description	Page
1		Whip Cover Components	Ref
2		Whip Kink Valve Assembly	Ref
3		Whip Pivot Assembly	Ref
4		Whip Hdpc. Tubing	Ref
		Whip Syringe Tubing	Ref
5		Whip Pneumatic / Hydraulic Components	Ref
6		Delivery Flex Arm Assy - *28 in.*	Ref
7		Internal Tubing	Ref

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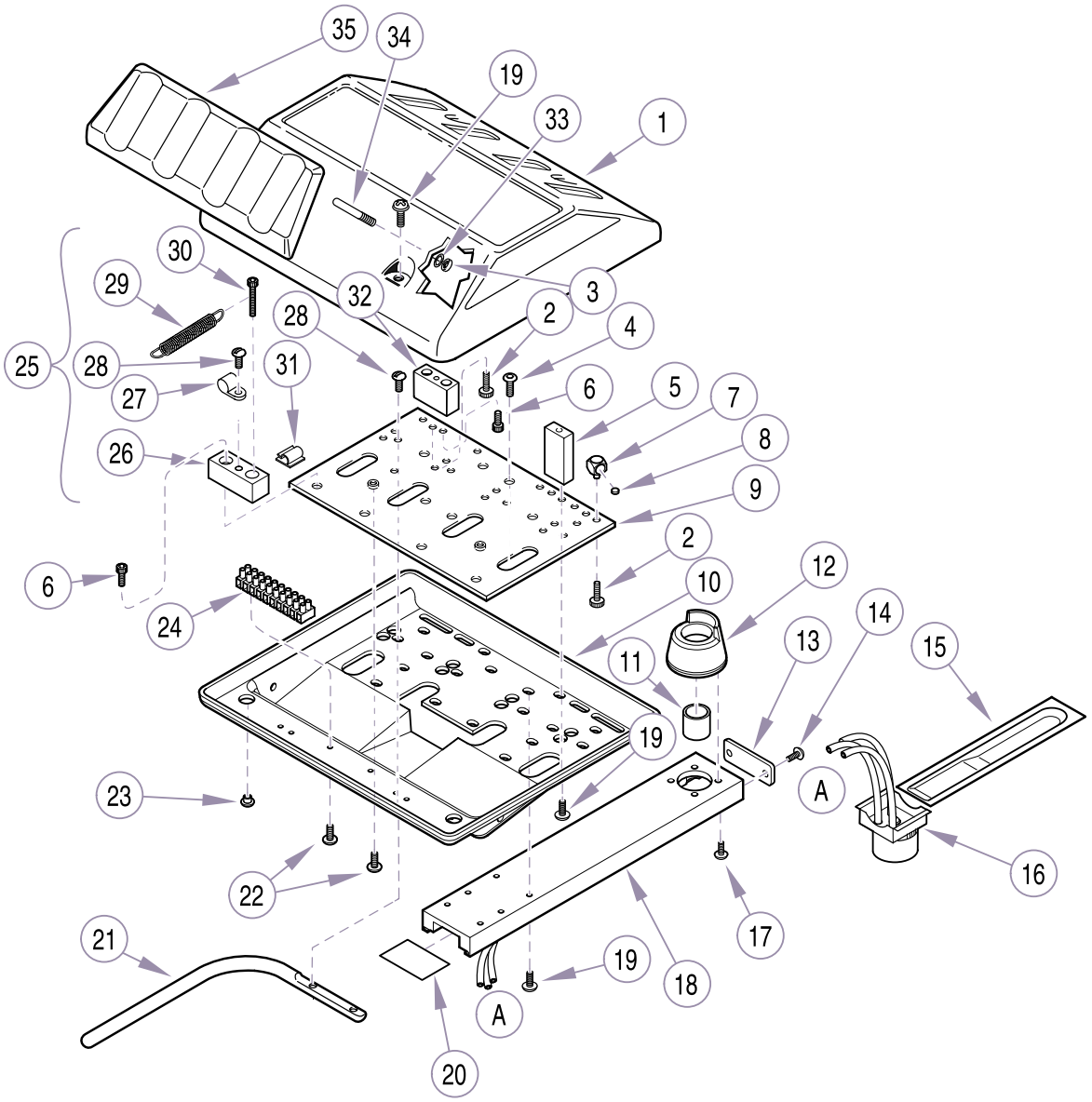
Whip Cover Components



KA982900i

Item	Part No.	Description	Qty
1	122152-01	Top Cover	1
2	152105	Thumb Screw	6
3	P1829	Nut	4
4	120716-2	Screw	4
5	122145-2	Rear Spacer	2
	122146-2	Front Spacer	2
6	119905	Screw	11
7	120623-2	Flow Adjust Fitting	4
8	120624	Flow Adjust Pad	4
9	122156-01	Chassis Plate (Modified)	1
10	122154-01	Bottom Cover	1
11	016-0076-31	Bearing	1
12	057-0641-50	Bearing Housing Assembly	1
13	117363A-50	Support Arm End Cap	1
14	121604-50	Screw	2
15	120582-01	Cover - Long	1
16	120754-50	Separator Bracket	1
17	P12577	Screw	4
18	021-0046-50	Instrument Head Support	1
19	105480	Screw	4

Item	Part No.	Description	Qty
20	120583-01	Cover - Short	1
21	122150-50	Handle - Right	1
	122151-50	Handle - Left	1
22	120233-50	Screw	6
23	120239	Hole Plug	1
24	015-1457-00	Terminal Block	1
25	152838	Spring Block Assembly (Syringe) (includes items 26 thru 30)	1
26	• 122131-2	• Spring Retainer Block	1
27	• 121656	• Cable Clamp	1
28	• P7017	• Screw	1
29	• 122138	• Spring	1
30	• 120959	• Screw	1
31	118167	Cord Clip	2
32	120591-2	Syringe Block	1
33	P11777	Washer	2
34	120593	Pad Holder Pin	2
35	120548-01	Instrument Pad (4 whip)	1
	053-1314-00	Instrument Pad (6 whip)	1

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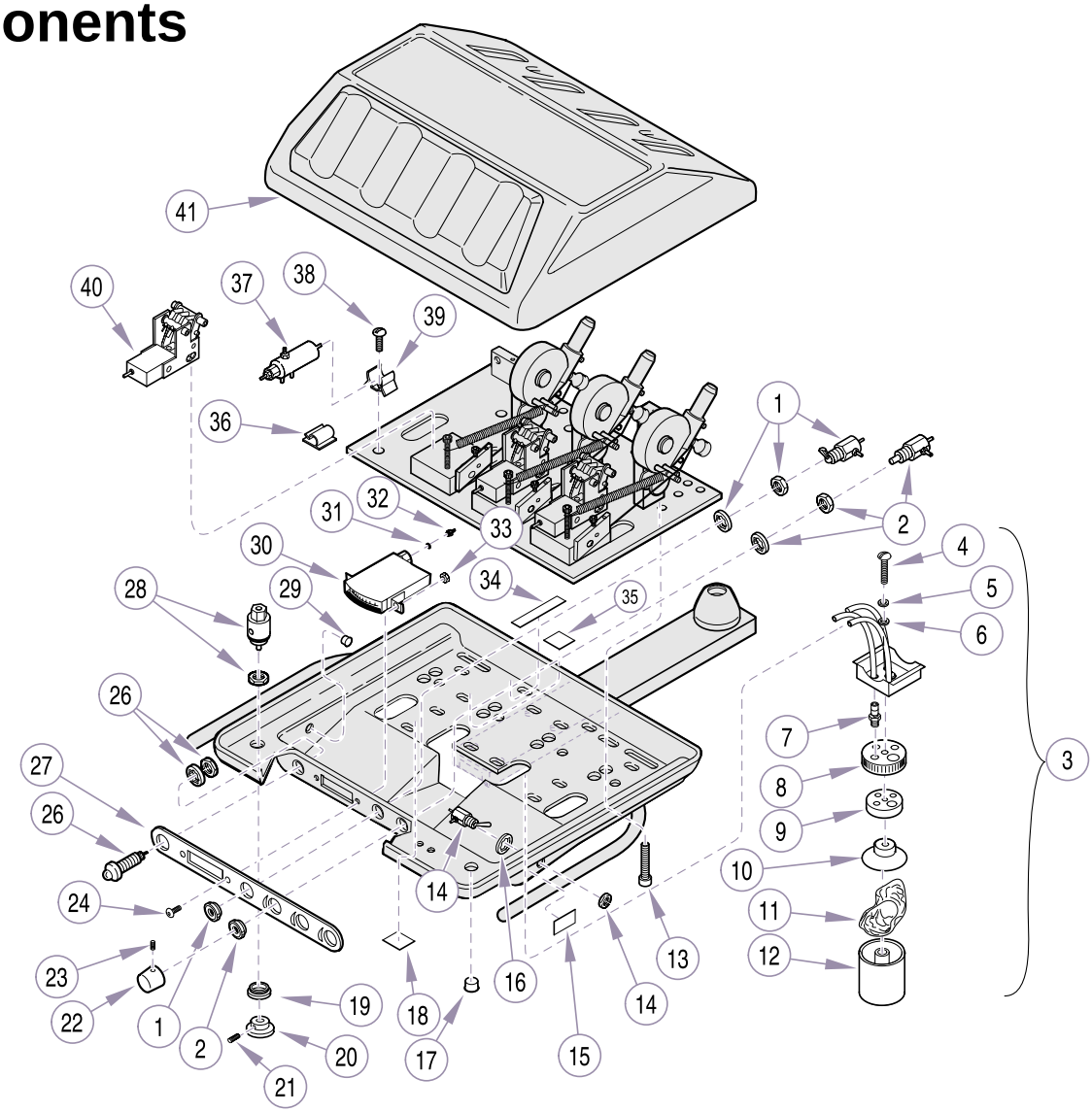
Whip Pneumatic/Hydraulic Components



KA982001i

Item	Part No.	Description	Qty
1	120169	Toggle Valve (Includes hardware)	1
2	029-2449-03	Needle Valve (Includes hardware)	3
3	152070	Air/Oil Separator Assembly (includes items 6 thru 14)	1
4	• 117601	• Screw	1
5	• P12572	• Washer	1
6	• P12575	• Washer	1
7	• 117349	• Fitting	3
8	• 120934-6	• Cap	1
9	• 120932	• Manifold	1
10	• 120933	• Diffuser	1
11	• 121547•	• Gauze Sponges	7
12	• 120937-5	• Bottle	1
13	P17928-2	Screw	3
14	117357	Toggle Switch (Includes hardware)	1
15	Tpw1538	Arm Lock Label	1
16	C2563	Washer	1
17	120236	White Plug Button	1
18	061-0782-00	CE Label	1
19	120388	Trim Nut	1
20	115561	Push Button	1
21	121650	Set Screw	1

Item	Part No.	Description	Qty
22	120170-50	Knob	3
23	120178	Set Screw	3
24	120612	Screw	2
25	P11777	Washer	2
26	117489	Indicator (Includes hardware)	1
27	061-0804-00	Int'l Delivery Head Decal	1
28	118940	Control Valve	1
29	120241	White Plug Button	1
30	117235	Pressure Gauge	1
31	P12575	Washer	1
32	109714	Fitting	1
33	111102	Nut	2
34	Tp1126	Whip Label	1
35	061-0733-00	CE Label	1
36	118167	Clip	1
37	152117	Coolant Water Control Valve	1
38	121337-2	Screw	1
39	117578	Clip	1
40		Kink Valve Assembly (Refer to "Whip Kink Valve Assembly")	Ref
41		Top Cover (Refer to "Whip Cover Components")	Ref

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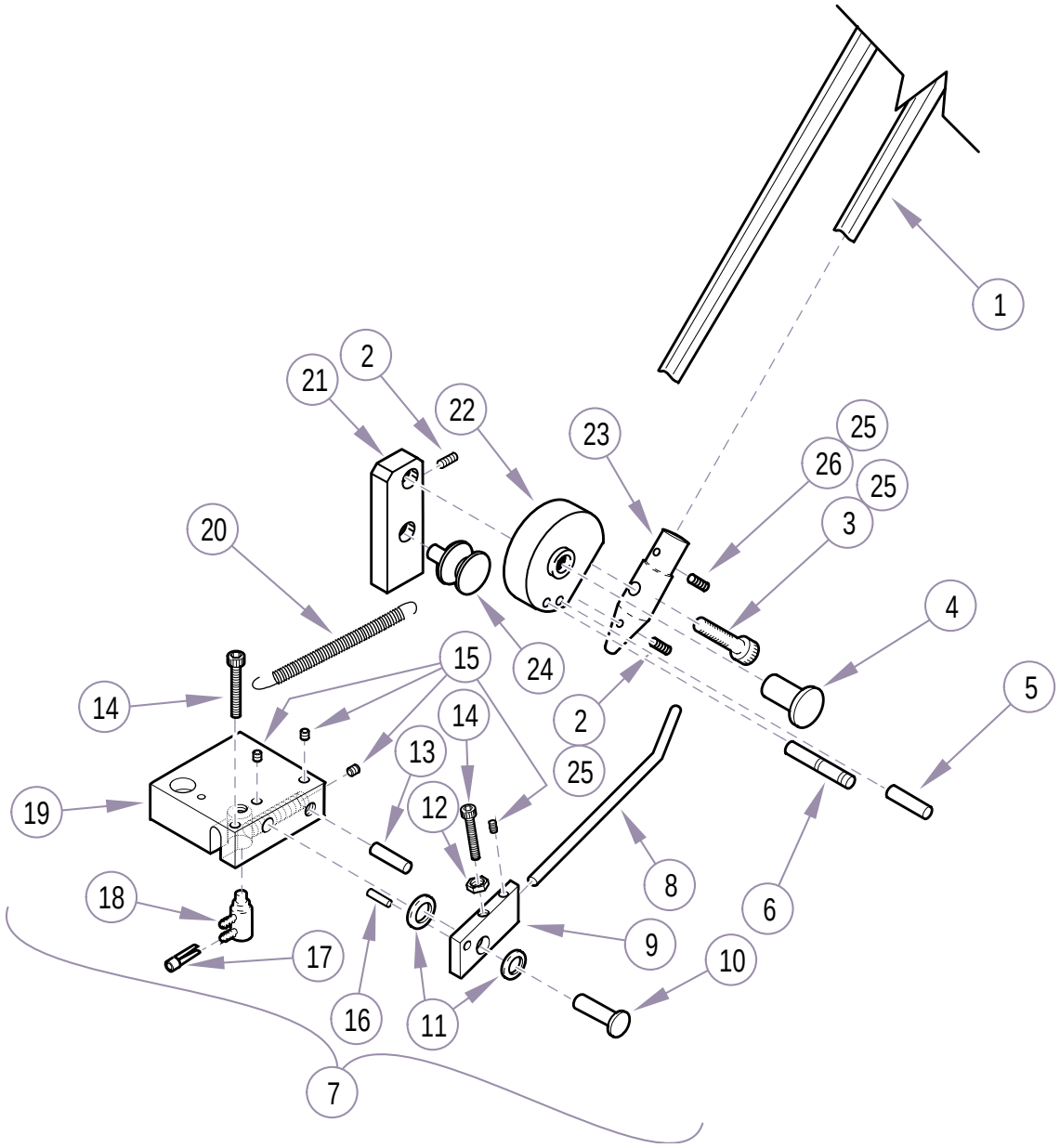
Whip Pivot Assembly



KA936201i

Item	Part No.	Description	Qty
1		Hdpc. Tubing (Refer to "Whip Handpiece Tubing")	Ref
		Syringe Tubing (Refer to "Whip Syringe Tubing")	Ref
2	122161	Set Screw	12
3	120611	Shoulder Screw	4
4	120569	Hub Pivot Pin	4
5	120608	Stop Pin	4
6	122129-2	Spring Hub Pin	4
7	152831	Actuator Assembly (Includes items 8 thru 20)	3
8	• 122177-2	• Wire Actuator	1
9	• 122175-2	• Actuator Pivot Block	1
10	• 122142-2	• Pivot Pin	1
11	• 117660	• Washer	2
12	• P1829	• Nut	1
13	• 122176-2	• Stop Pin	1
14	• 120959	• Screw	2
15	• P11836	• Set Screw	4
16	• 122080	• Pin	1
17	• 117479	• Uni-clamp	2
18	• 120910	• Pilot Valve	1
19	• 122174-2	• Spacer Block	1
20	• 122138	• Extension Spring (standard)	1
	122509	Extension Spring (max. tension - optional)	1
21	122127-2	Hub Pivot Block	4
22	120551	Whip Hub	4
23	057-0590-00	Whip Pivot	4
24	121363	Stop Pin	4
25	042-0024-00	Loctite	AR
26	122709	Set Screw	6

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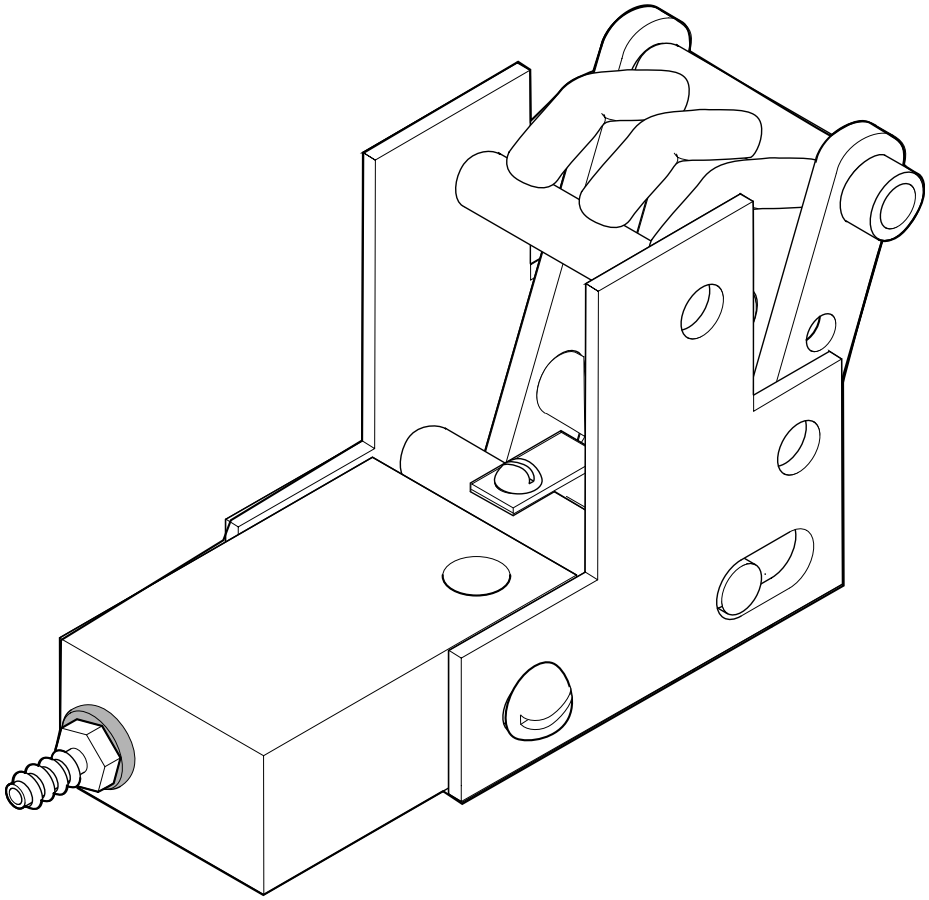
Whip Kink Valve Assembly



DA111100i

Item	Part No.	Description	Qty	Item	Part No.	Description	Qty
	152047	Kink Valve Assembly ..... *[Component parts not available]*	AR				

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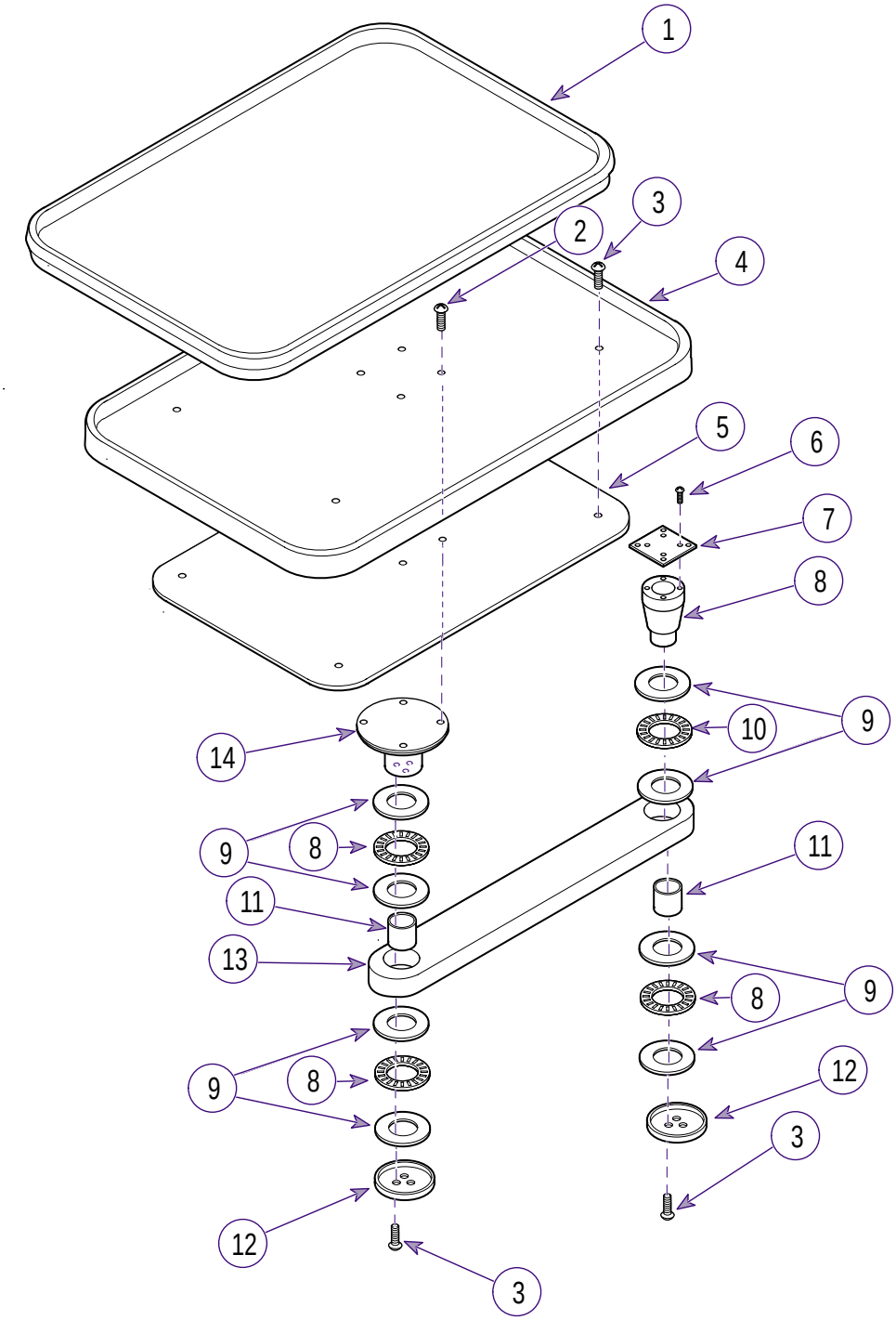
Whip Unit Instrument Tray Assembly



KA926500

Item	Part No.	Description	Qty.	Item	Part No.	Description	Qty.
1	151915-01	Tray (9.56 in. x 13.37 in.)	1	7	120581-2	Tray Arm Plate	1
	151916-01	Tray (10.56 in. x 15.12 in.)	1	8	120597-01	Instrument Tray Hub	1
2	120612	Screw	4	9	119458	Washer	8
3	119905	Screw	10	10	119462	Needle Bearing	4
4	120613-01	Tray Support (9.25 in. x 13.06 in.)	1	11	120579	Bearing	2
	120615-01	Tray Support (10.12 in.14.62 in.)	1	12	120580-50	Bearing Cap	2
5	120617-50	Plate	1	13	121079-50	Instrument Tray Arm	1
6	105480	Screw	4	14	120585-2	Tray Arm Pin	1

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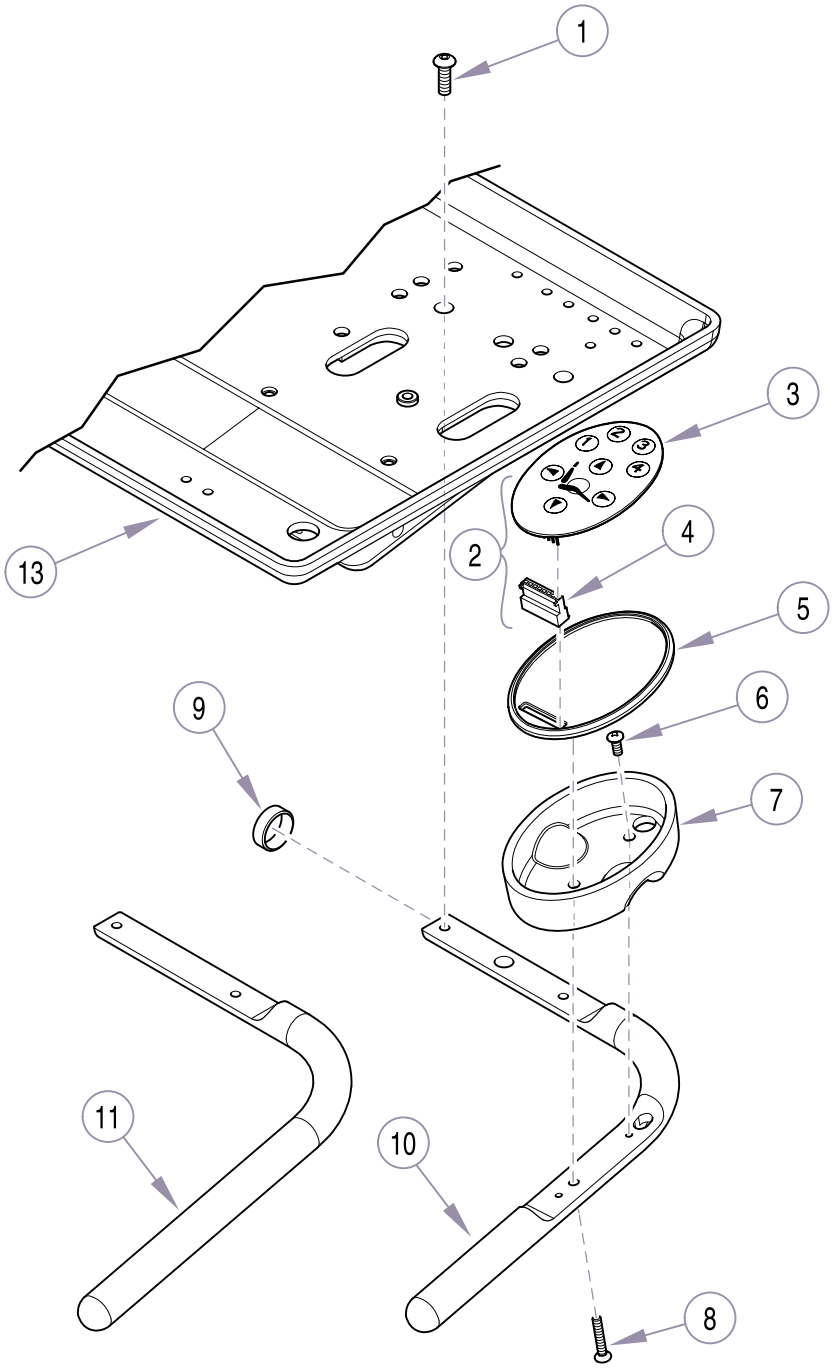
Chair Control Assembly
- *Whip Unit Mounted*



KA983000i

Item	Part No.	Description	Qty
	029-2684-00	Right Hand Whip Chair Control Assembly (Shown).	1
	029-2685-00	Left Hand Whip Chair Control Assembly *(not shown)*	1
1	P7017	Screw	4
2	029-2606-00	Touch Control Pad (incl # 3 thru 5)	1
3	• 015-1565-00	• Membrane Switch Panel	1
4	• 015-1324-01	• IDC Connector	1
5	• 053-1071-01	• Control Bezel	1
6	040-0006-98	Screw	2
7	053-1208-00	Chair Control Housing	1
8	040-0006-92	Screw	1
9	121988-50	Cable Retainer Ring	1
10	057-0650-50	Right Hand Chair Control Handle (Shown)	1
	057-0651-50	Left Hand Chair Control Handle (Not Shown)	1
11	122150-50	Right Hand Whip Handle (Shown)	1
	122151-50	Left Hand Whip Handle (Not Shown)	1
12	109191•	Cable Clamp (Not Shown)	1
13		Bottom Cover (Refer to "Whip Cover Components")	Ref

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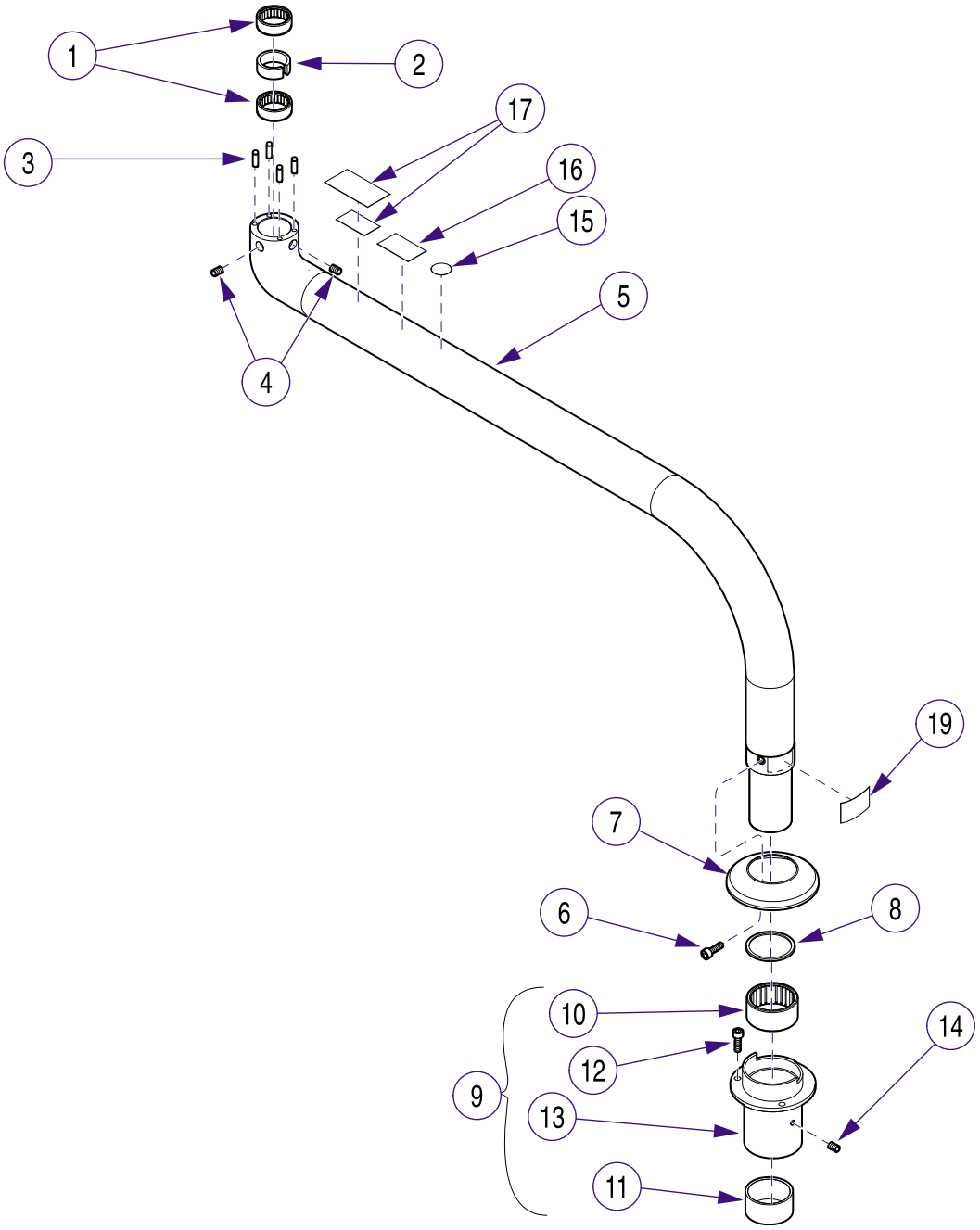
Unit Arm Assembly - *Console Mtd. Units*



KA949701i

Item	Part No.	Description	Qty
	029-2536-00	Console Mt'd Unit Arm Assy. w/ Bearing (Includes Items 1 thru 9)	1
1	• 016-0856-02	• Needle Bearing	2
2	• 016-0837-00	• Slotted Bearing Sleeve	1
3	• 122348	• Dowel Pin	4
4	• 040-0010-126	• Set Screw	2
5	• 030-1281-50	• Unit Arm Assembly	1
6	• 040-0250-07	• Screw	1
7	• 053-1221-01	• Unit Trim Ring	1
8	• 053-1151-01	• Curved Arm Bearing Washer	1
9	• 029-2498-00	• Console Bearing Assembly (includes items 10 thru 14)	1
10	• • 016-0856-00	• • Needle Bearing	1
11	• • 016-0149-20	• • Iglide Bearing	1
12	• • 040-0250-07	• • Screw	3
13	• • 057-0569-00	• • Console Bearing Housing	1
14	• • 040-0250-155	• • Set Screw	2
15	061-0652-00	Type B Label	1
16	061-0735-00	ETL Label	1
17		Serial Number Label	1
18	061-0666-00	Clear Laminate (Not Shown)	1
19	061-0818-00	Stop Screw Caution Label	1

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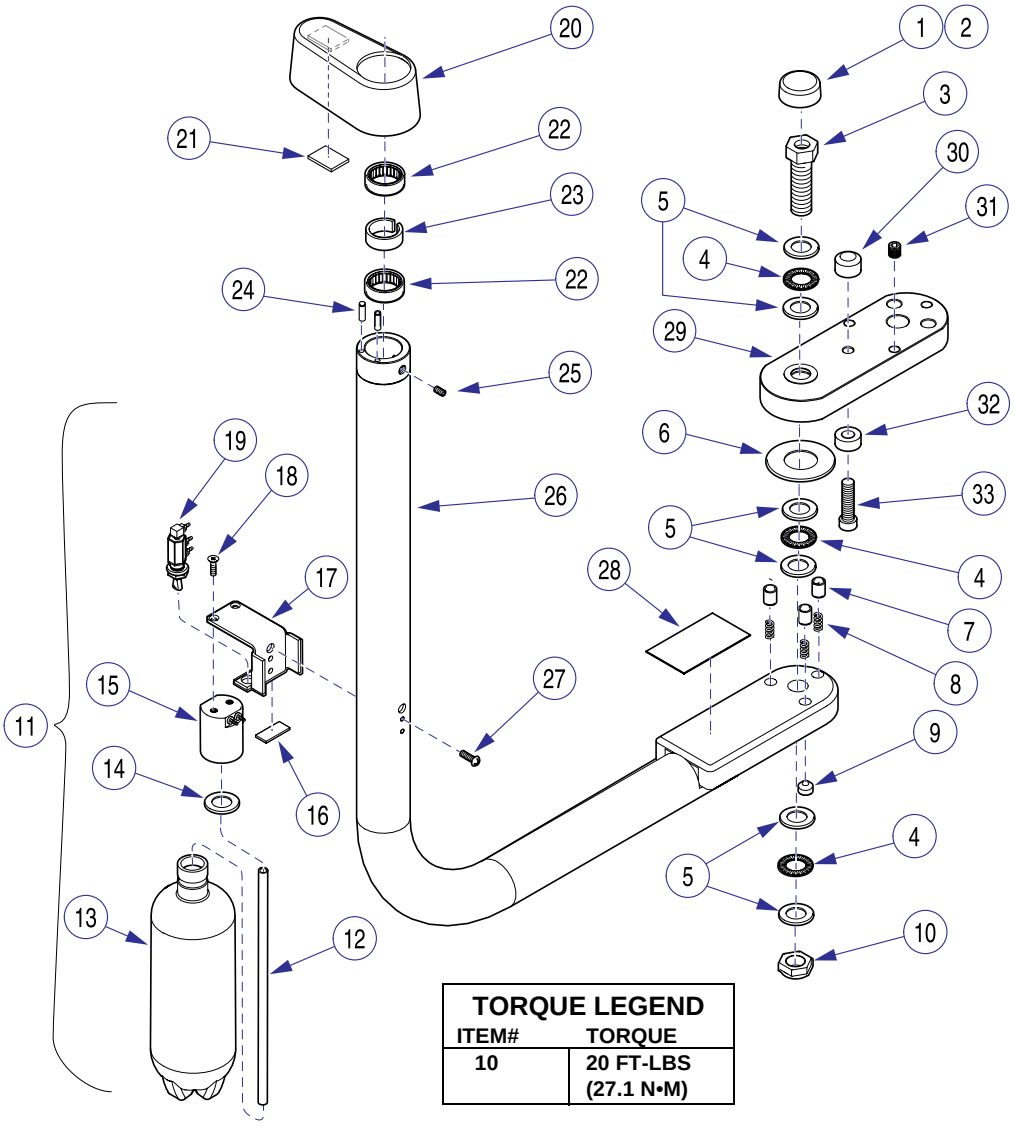
Unit Arm Assembly - *L/R Units*



TORQUE LEGEND	
ITEM#	TORQUE
10	20 FT-LBS (27.1 N•M)

KA959200i

Used on units with Serial Number NV1000 thru NV1476

Item	Part No.	Description	Qty
	029-2538-00	L/R Mounted Unit Arm and Support Assembly (Includes Items 1 thru 33)	1
1	• 122596-01	• Unit Bolt Cover	1
2	• 275184	• Double Sided Tape (Sold by the inch)	1
3	• 122560	• Screw	1
4	• 119033	• Thrust Bearing	3
5	• 119034	• Thrust Race	6
6	• 122555	• Washer (Apply Adhesive # 275392	1
7	• 122564	• Friction Bearing	3
8	• 121997	• Spring	3
9	• 122572	• Set Screw	3
10	• 122553	• Stop Nut	1
11	• 029-2518-00	• L/R Water Bottle Assembly (Includes Items 12 thru 21)	1
12	• • 177524	• • Tubing (Sold by the Foot)	1/4
13	• • 122302	• • Water Bottle	1
14	• • 120393	• • Gasket	1
15	• • 153284	• • Water Bottle Cap Assembly	1
16	• • 122532-50	• • Water Bottle Label	1
17	• • 061-0780-00	• • Water Select Bracket	1
18	• • 121964	• • Screw	2
19	• • 029-2496-02	• • Toggle Switch Assembly W/ Fittings	1
20	• • 122535-01	• • Water Bottle Cover	1
21	• • 275184	• • 3/4” Double Sided Tape	AR
22	• 016-0856-02	• Needle Bearing	2
23	• 016-0837-00	• Slotted Bearing Sleeve	1
24	• 122348	• Dowel Pin	2
25	• 040-0010-126	• Set Screw	2
26	• 030-1279-50	• Unit Radius Arm Assembly	1
27	• 105480	• Screw	2
28	• TPW1709	• Warning Label	1
29	• 050-4919-50	• L/R Extension Plate	1
30	• 122550	• Light Arm Stop Bumper	1
31	• 122547	• Set Screw	3
32	• 122549	• Unit Arm Stop Bumper	1
33	• 107995	• Screw	1
34	016-0882-00	Vinyl Label Pouch (Found on the Foot End of the Chair)	1
35	003-1128-00	L/R Wire Diagram (Found in Item 34)	1
36	003-1126-00	L/R Flow Diagram (Found in Item 34)	1

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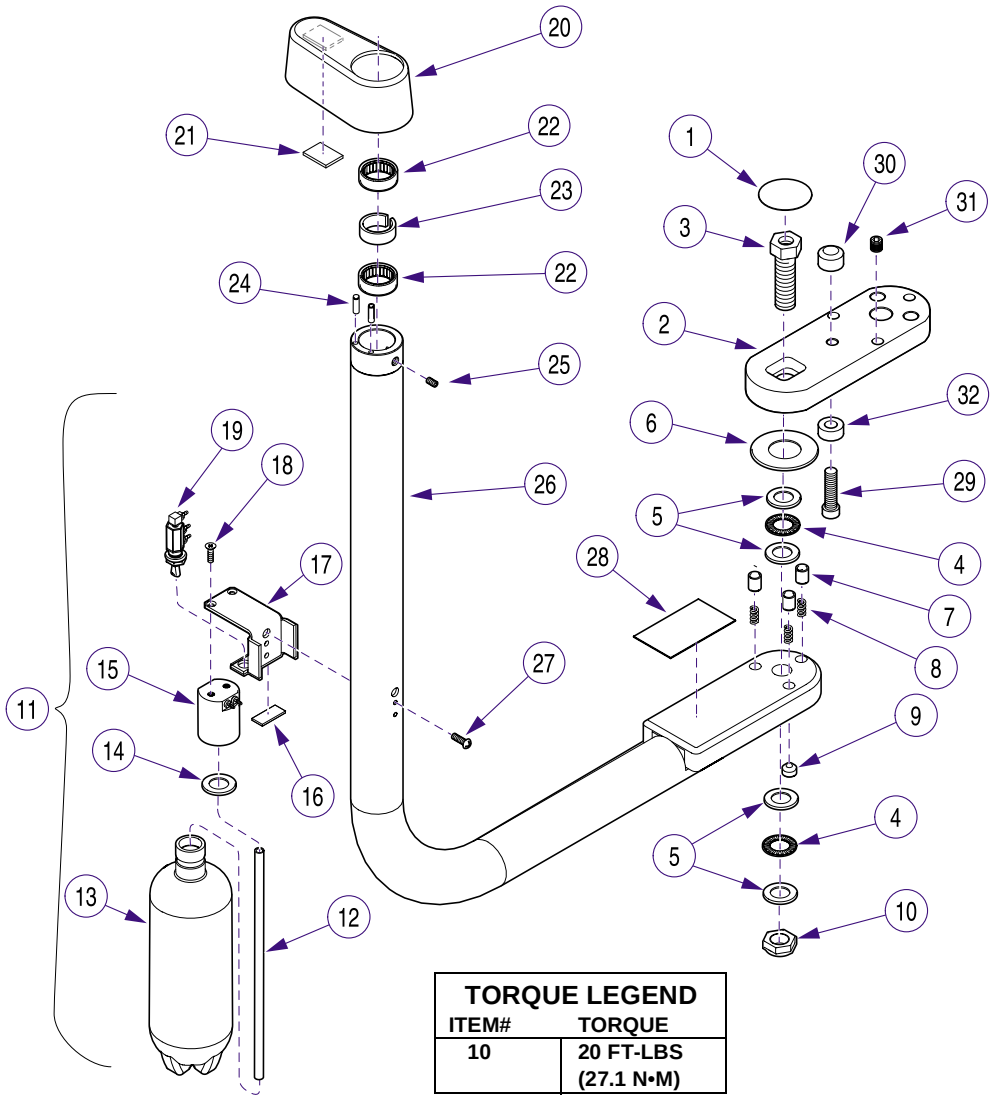
Unit Arm Assembly - *L/R Units*



TORQUE LEGEND	
ITEM#	TORQUE
10	20 FT-LBS (27.1 N•M)

KA959201i

Used on units with Serial Number NV1477 thru Present

Item	Part No.	Description	Qty
	029-2538-00	L/R Mounted Unit Arm and Support Assembly (Includes Items 1 thru 32)	1
1	• 061-0819-00	• Extension Bolt Cover	1
2	• 050-5100-50	• L/R Extension Plate	1
3	• 042-0206-00	• Screw	1
4	• 119033	• Thrust Bearing	2
5	• 155287	• Thrust Race	4
6	• 122555	• Washer (Apply Adhesive # 275392	1
7	• 122564	• Friction Bearing	3
8	• 121997	• Spring	3
9	• 122572	• Set Screw	3
10	• 122553	• Stop Nut	1
11	• 029-2518-00	• L/R Water Bottle Assembly (Includes Items 12 thru 21)	1
12	• • 177524	• • Tubing (Sold by the Foot)	1/4
13	• • 122302	• • Water Bottle	1
14	• • 120393	• • Gasket	1
15	• • 153284	• • Water Bottle Cap Assembly (Includes Items 12 & 14)	1
16	• • 122532-50	• • Water Bottle Label	1
17	• • 061-0780-00	• • Water Select Bracket	1
18	• • 121964	• • Screw	2
19	• • 029-2496-02	• • Toggle Switch Assembly W/ Fittings	1
20	• • 122535-01	• • Water Bottle Cover	1
21	• • 275184	• • 3/4” Double Sided Tape	AR
22	• 016-0856-02	• Needle Bearing	2
23	• 016-0837-00	• Slotted Bearing Sleeve	1
24	• 122348	• Dowel Pin	2
25	• 040-0010-126	• Set Screw	2
26	• 030-1279-50	• Unit Radius Arm Assembly	1
27	• 105480	• Screw	2
28	• TPW1709	• Warning Label	1
29	• 107995	• Screw	1
30	• 122550	• Light Arm Stop Bumper	1
31	• 122547	• Set Screw	3
32	• 122549	• Unit Arm Stop Bumper	1

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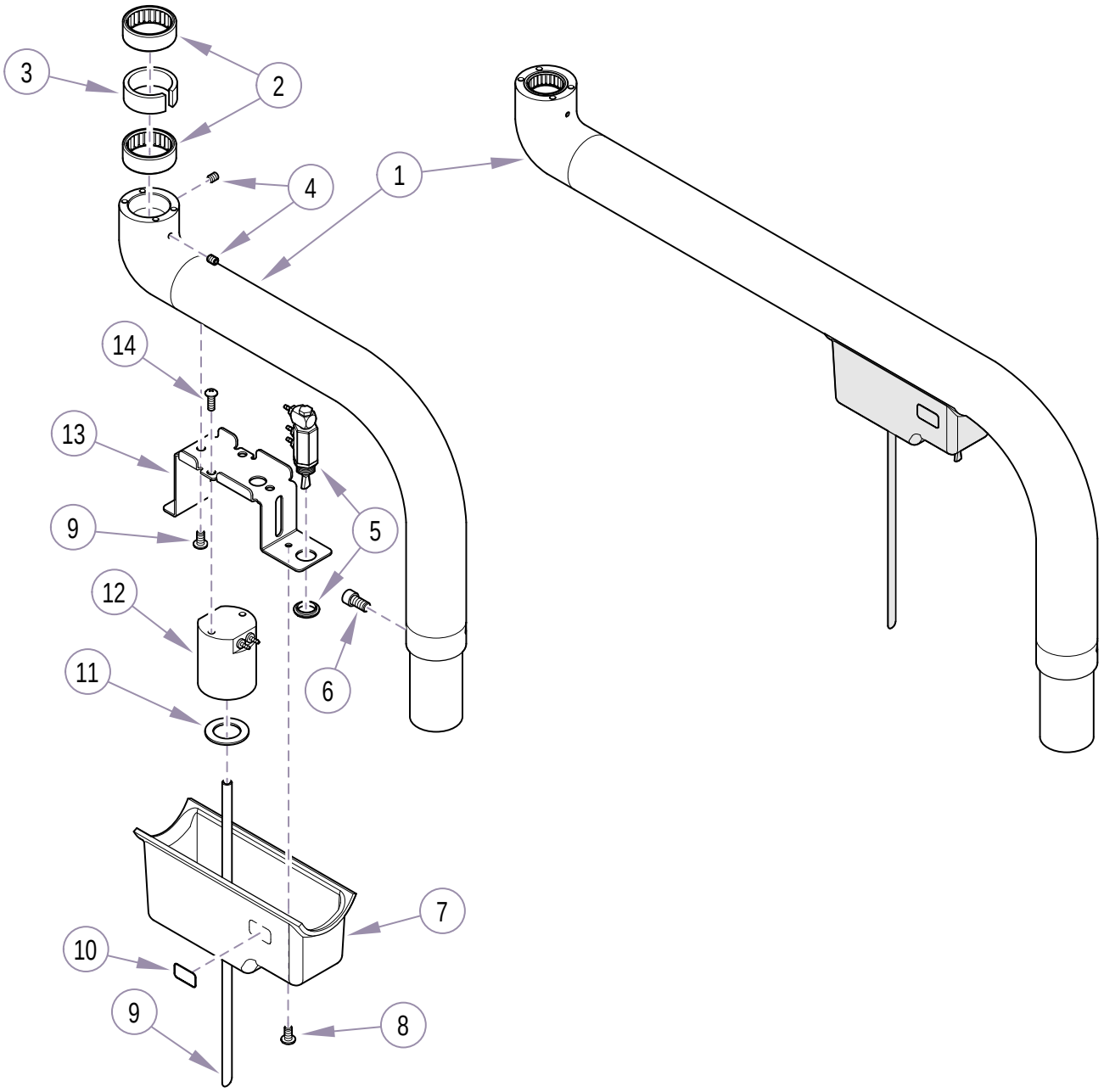
Unit Arm Assembly - *Wall / Cabinet Mtd. Units*



DA113100i

Item	Part No.	Description	Qty
	029-2886-00	Short Arm Assembly *(13.5 in.)* (includes items 1 thru 14)	1
	029-2886-01	Long Arm Assembly *(24 in.)* (includes items 1 thru 14)	1
1	• 030-1401-50	• Short Unit Arm Weldment *(13.5 in.)*	1
	• 030-1401-51	• Long Unit Arm Weldment *(24 in.)*	1
2	• 016-0856-02	• Needle Bearing	2
3	• 016-0837-00	• Slotted Sleeve Bearing	1
4	• 040-0010-126	• Set Screw	2
5	• 029-2496-02	• Toggle Switch Assembly	1
6	• 040-0250-07	• Screw	1
7	• 053-1280-00	• Water Bottle Cover	1
8	• 040-0010-109	• Screw	4
9	• 177524	• Tubing	AR
10	• 061-0780-00	• L/R Water Selector Label	1
11	• 120393	• Gasket	1
12	• 153276	• Bottle Cap Assembly	1
13	• 050-5402-00	• Bottle Mount Bracket	1
14	• 120385	• Screw	2

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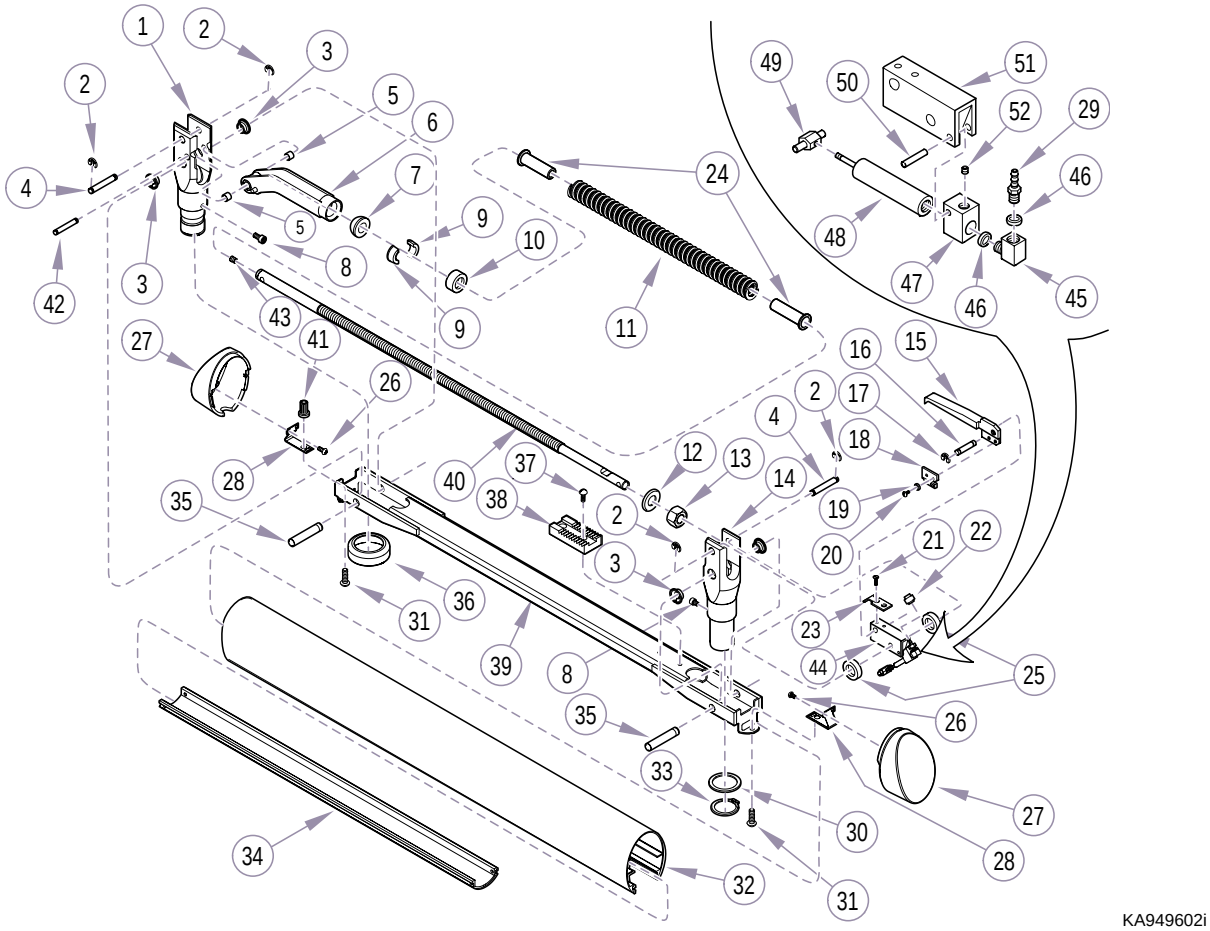
Delivery Flex Arm - *28 in.*



KA949602i

Used on units with Serial Numbers NV1000 thru NV1493

Item	Part No.	Description	Qty
	029-2428-00	Flex Arm Assy (Inc. Items 1 thru 52)	1
1	• 052-0357-50	• Flex Arm Fixed Mount	1
2	• 042-0065-00	• Klipring	6
3	• 016-0392-13	• DU Flange Bearing	4
4	• 057-0618-00	• Clevis Pin	2
5	• 016-0076-06	• Bushing	6
6	• 030-1245-00	• Spring Link Assembly	1
7	• 117418	• Aligning Washer	1
8	• 040-0010-87	• Bolt	2
9	• 117744	• Friction Pad	2
10	• 117612-2	• Friction Washer Sleeve	1
11	• 025-0070-00	• Compression Spring	1
12	• 045-0001-107	• Washer	1
13	• C1079	• Nut	1
14	• 052-0358-50	• Flex Arm Mount	1
15	• 117576-2	• Lock Pawl (Right Side)	1
	• 117575-2	• Lock Pawl (Left Side)	1
16	• 057-0621-00	• Latch Pawl Pivot Pin	1
17	• 042-0065-00	• Klipring	6
18	• 118070-2	• Pawl Pivot Bracket (Left Side shown)	1
	• 118071-2	• Pawl Pivot Bracket (Right Side)	1
19	• P11777	• Washer	4
20	• 103205	• Screw	4
21	• 118100	• Screw	2
22	• 117479	• Uni-Clamp	1
23	• 118073	• Stop Plate	1
24	• 057-0644-00	• Flex Arm Spring Spacer	2
25	•	• Spacer	2
26	• 040-0006-09	• Screw	4
27	• 053-1108-00	• End Cap	2
28	• 050-4767-00	• End Cap Mounting Bracket	2
29	• 109714	• Barbed Fitting	1
30	• 053-1179-00	• Thrust Washer	1
31	• 040-0006-27	• Screw	2
32	• 021-0038-50	• Flex Arm Cover	1
33	• 042-0056-04	• External Retaining Ring	1
34	• 021-0039-50	• Flex Arm Extrusion	1
35	• 057-0608-00	• Flex Arm Pivot Pin	2
36	• 053-1218-01	• Joint Cover	1
37	• 040-0010-98	• Screw	2
38	• 117577	• Latch Block	1
39	• 030-1250-50	• Flex Arm Tube Assembly	1
40	• 051-0906-00	• Spring Rod	1
41	• 042-0045-13	• Nutsert	2
42	• 057-0620-00	• Knurled Pivot Pin	1
43	• 040-0008-47	• Set Screw	1
44	• 149931	• Air Cyl. Assy. (Incl. items 45 thru 52)	2
45	• • 113295	• • Elbow Fitting	1
46	• • 117660	• • Gasket	2
47	• • 118072	• • Air Cylinder Mount	1
48	• • 117510	• • Air Cylinder	1
49	• • 117409-2	• • Air Cylinder Pin	1
50	• • 121506	• • Dowel Pin	1
51	• • 118069-2	• • Pawl Mount	1
52	• • P11836	• • Set Screw	1

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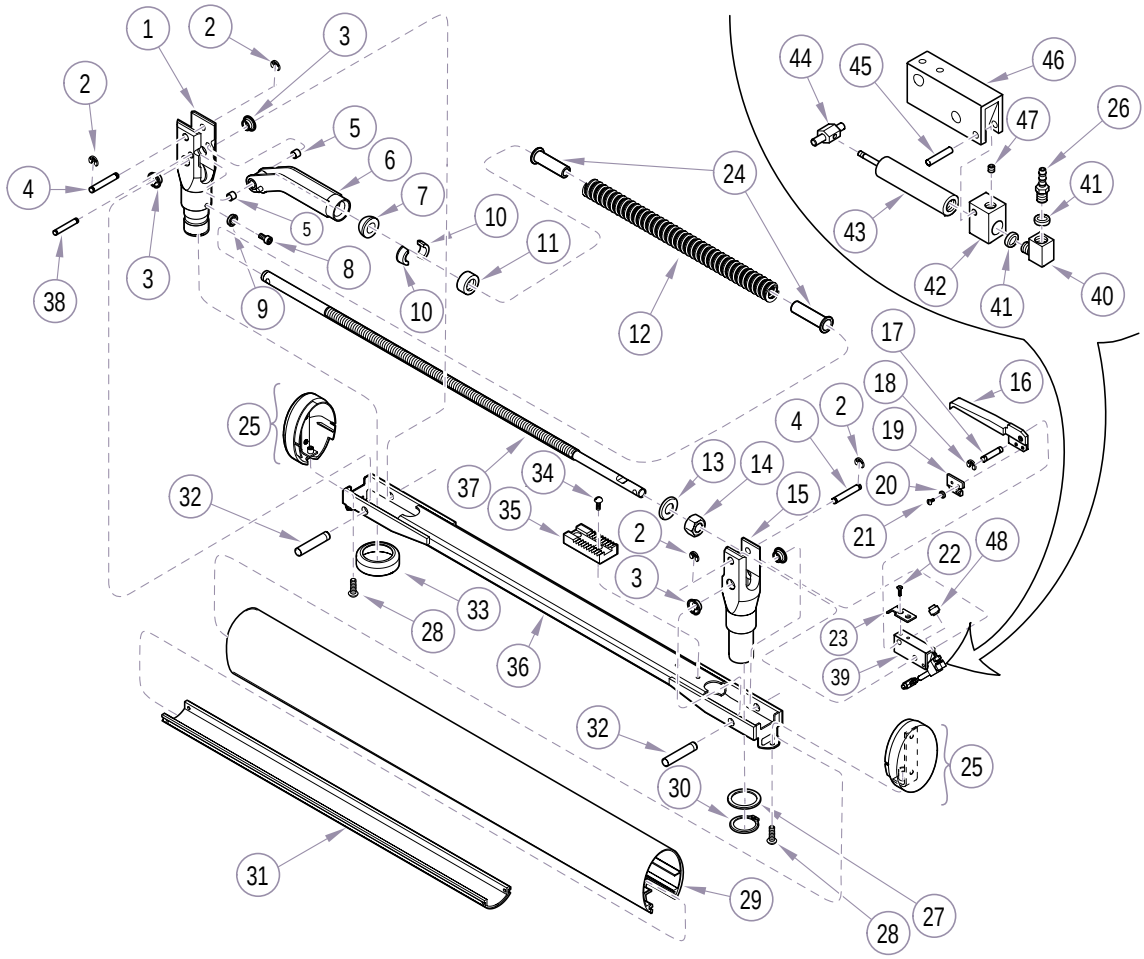
Delivery Flex Arm - *28 in.*



Used on units with Serial Numbers NV1494 to Present & RF1000 to Present

Item	Part No.	Description	Qty
	029-2428-00	Flex Arm Assy (Inc. Items 1 thru 39)	1
1	• 052-0357-50	• Flex Arm Fixed Mount	1
2	• 042-0065-00	• Klipring	4
3	• 016-0392-13	• DU Flange Bearing	4
4	• 057-0618-00	• Clevis Pin	2
5	• 016-0076-06	• Bushing	6
6	• 030-1245-00	• Spring Link Assembly	1
7	• 117418	• Aligning Washer	1
8	• 040-0010-87	• Bolt	2
9	• 053-1187-00	• Screw Base Cover	2
10	• 117744	• Friction Pad	2
11	• 117612-2	• Friction Washer Sleeve	1
12	• 025-0070-00	• Compression Spring	1
13	• 045-0001-107	• Washer	1
14	• C1079	• Nut	1
15	• 052-0358-50	• Flex Arm Mount	1
16	• 117576-2	• Lock Pawl (Right Side)	1
	• 117575-2	• Lock Pawl (Left Side)	1
17	• 057-0621-00	• Latch Pawl Pivot Pin	1
18	• 042-0065-00	• Klipring	2
19	• 118070-2	• Pawl Pivot Bracket (Left Side shown)	1
	• 118071-2	• Pawl Pivot Bracket (Right Side)	1
20	• P11777	• Washer	4
21	• 103205	• Screw	4
22	• 118100	• Screw	2
23	• 118073-2	• Stop Plate	1
24	• 057-0644-00	• Flex Arm Spring Spacer	2
25	• 029-2721-00	• End Cap Assembly (includes mtg. bracket & nutsert)	2
26	• 109714	• Barbed Fitting	1
27	• 053-1179-00	• Thrust Washer	1
28	• 040-0006-27	• Screw	2
29	• 021-0038-50	• Flex Arm Cover	1
30	• 042-0056-04	• External Retaining Ring	1
31	• 021-0039-50	• Flex Arm Extrusion	1
32	• 057-0608-00	• Flex Arm Pivot Pin	2
33	• 053-1218-01	• Joint Cover	1
34	• 040-0010-98	• Screw	2
35	• 117577	• Latch Block	1
36	• 030-1250-50	• Flex Arm Tube Assembly	1
37	• 051-0906-00	• Spring Rod	1
38	• 057-0620-00	• Knurled Pivot Pin	1
39	• 149931	• Air Cyl. Assy. (incl. items 40 thru 47)	2
40	• • 113295	• • Elbow Fitting	1
41	• • 117660	• • Gasket	2
42	• • 118072	• • Air Cylinder Mount	1
43	• • 117510	• • Air Cylinder	1
44	• • 117409-2	• • Air Cylinder Pin	1
45	• • 121506	• • Dowel Pin	1
46	• • 118069-2	• • Pawl Mount	1
47	• • P11836	• • Set Screw	1
48	117479	Uni-Clamp	1
49	061-0817-00	Stop Pin Caution Tag (Not Shown)	1

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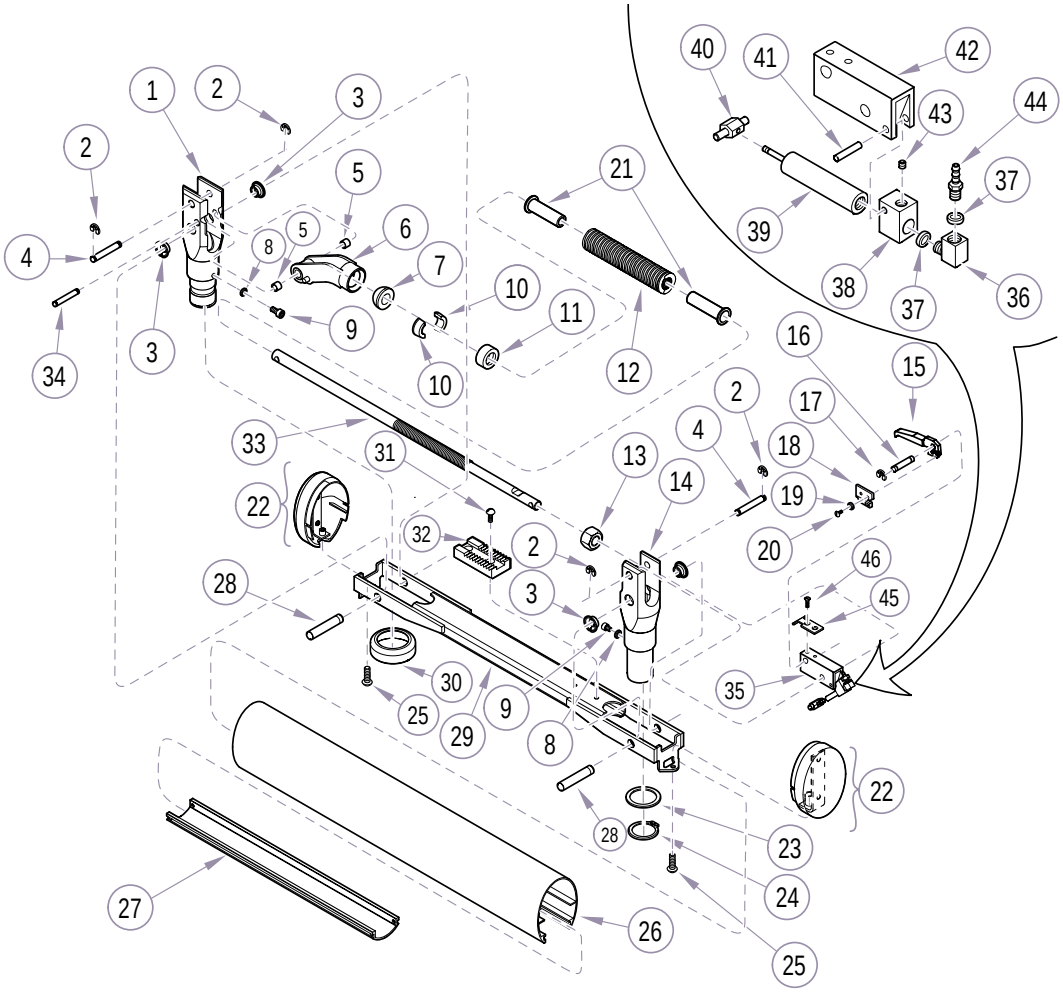
Delivery Flex Arm - *16 in.*



DA113200i

Used on units with Serial Numbers RF1000 to Present

Item	Part No.	Description	Qty
	029-2888-00	Flex Arm Assy (Inc. Items 1 thru 53)	1
1	• 052-0357-50	• Flex Arm Fixed Mount	1
2	• 042-0065-00	• Klipring	4
3	• 016-0392-13	• DU Flange Bearing	4
4	• 057-0618-00	• Clevis Pin	2
5	• 016-0076-06	• Bushing	6
6	• 030-1403-00	• Short Spring Link Assembly	1
7	• 117418	• Aligning Washer	1
8	• 053-1187-00	• Screw Base Cover	2
9	• 040-0010-87	• Bolt	2
10	• 117744	• Friction Pad	2
11	• 117612-2	• Friction Washer Sleeve	1
12	• 025-0076-00	• Compression Spring	1
13	• C1079	• Nut	1
14	• 052-0358-50	• Flex Arm Mount	1
15	• 117576-2	• Lock Pawl (Right Side)	1
	• 117575-2	• Lock Pawl (Left Side)	1
16	• 118154-3	• Spring Rod Pin	1
17	• 042-0065-00	• Retaining Ring	2
18	• 118070-2	• Pawl Pivot Bracket (Left Side shown)	1
	• 118071-2	• Pawl Pivot Bracket (Right Side)	1
19	• P11777	• Washer	4
20	• 103205	• Screw	4
21	• 057-0728-00	• Flex Arm Spring Spacer	2
22	• 029-2721-00	• End Cap (incl. bracket & nutsert)	2

Item	Part No.	Description	Qty
23	• 053-1179-00	• Thrust Washer	1
24	• 042-0056-04	• External Retaining Ring	1
25	• 040-0006-27	• Screw	2
26	• 021-0038-52	• Short Flex Arm Cover	1
27	• 021-0039-52	• Short Flex Arm Extrusion	1
28	• 057-0608-00	• Flex Arm Pivot Pin	2
29	• 030-1404-50	• Short Flex Arm Tube Assembly	1
30	• 053-1218-01	• Joint Cover	1
31	• 040-0010-98	• Screw	2
32	• 117577	• Latch Block	1
33	• 051-0906-02	• Short Spring Rod	1
34	• 057-0620-00	• Knurled Pivot Pin	1
35	• 149931	• Air Cyl. Assy. (incl. items 45 thru 54)	2
36	• 113295	• Elbow Fitting	1
37	• 117660	• Gasket	2
38	• 118072	• Air Cylinder Mount	1
39	• 117510	• Air Cylinder	1
40	• 117409-2	• Air Cylinder Pin	1
41	• 121506	• Dowel Pin	1
42	• 118069-2	• Pawl Mount	1
43	• P11836	• Set Screw	1
44	• 109714	• Barbed Fitting	1
45	• 118073-2	• Stop Plate	1
46	• 118100	• Screw	2

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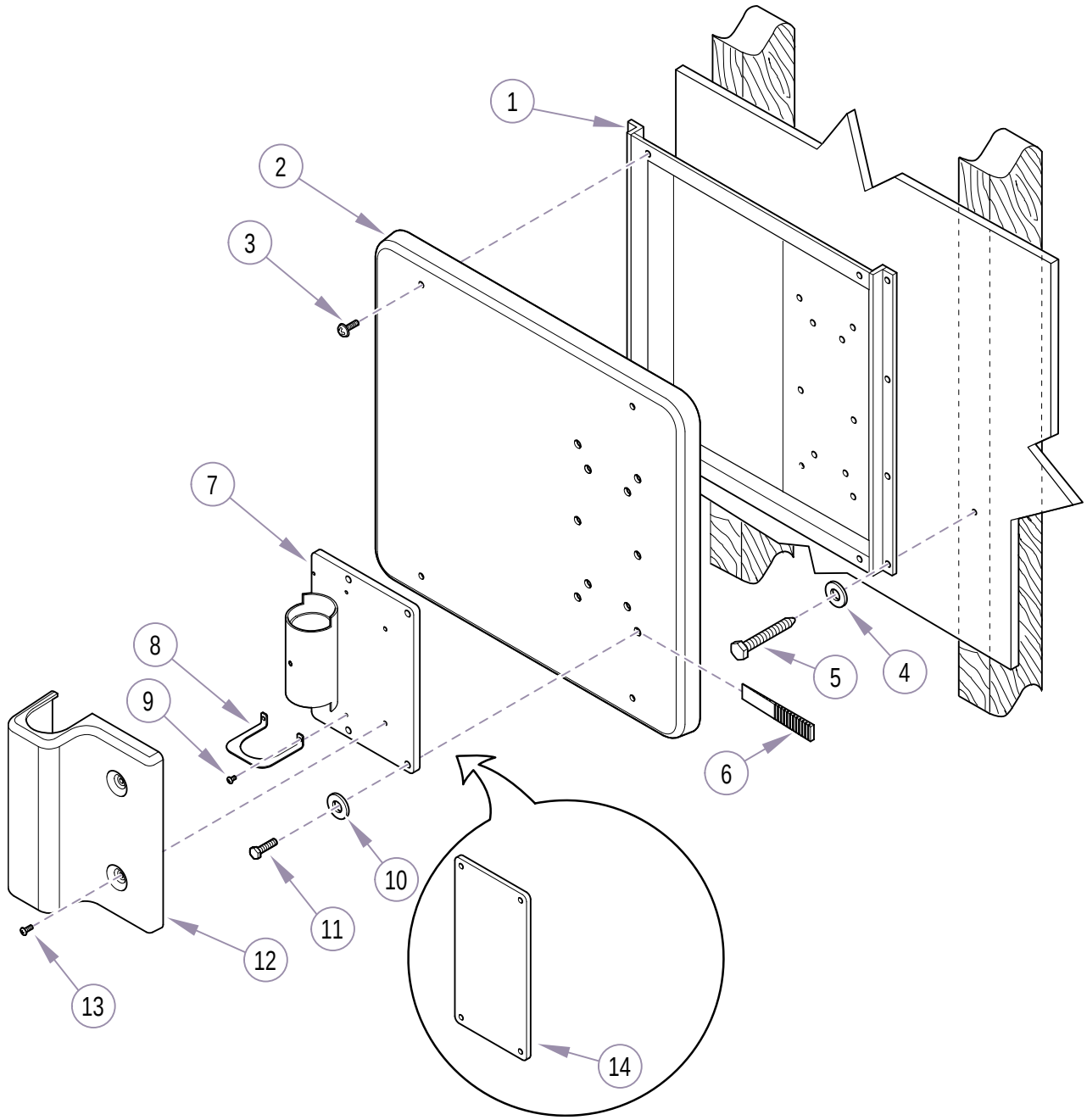
Wall / Cabinet Mounting Components



DA114800i

Item	Part No.	Description	Qty
1	152469-50	Wall Mt. Frame *(wall mtd. only)*	1
2	121647-50	Wall Mt. Cover *(wall mtd. only)*	1
3	120233-50	Screw *(wall mtd. only)*	4
4	106202	Washer *(wall mtd. only)*	8
5	101317	Lag Screw *(wall mtd. only)*	8
6	053-1242-00	Shim	2
7	029-2887-00	Bearing Mt. Assembly	1
8	050-5404-50	Umbilical Retainer	1
9	040-0006-98	Screw	2
10	118047	Washer	4
11	120288	Screw (1/4-20 x 1 1/2")	4
	040-0250-69	Screw (1/4-20 x 2 1/4")	4
12	053-1281-00	Bearing Mt. Cover	1
13	120233-50	Screw	2
14	050-5410-50	Backing Plate *(cabinet mtd. only)*	1

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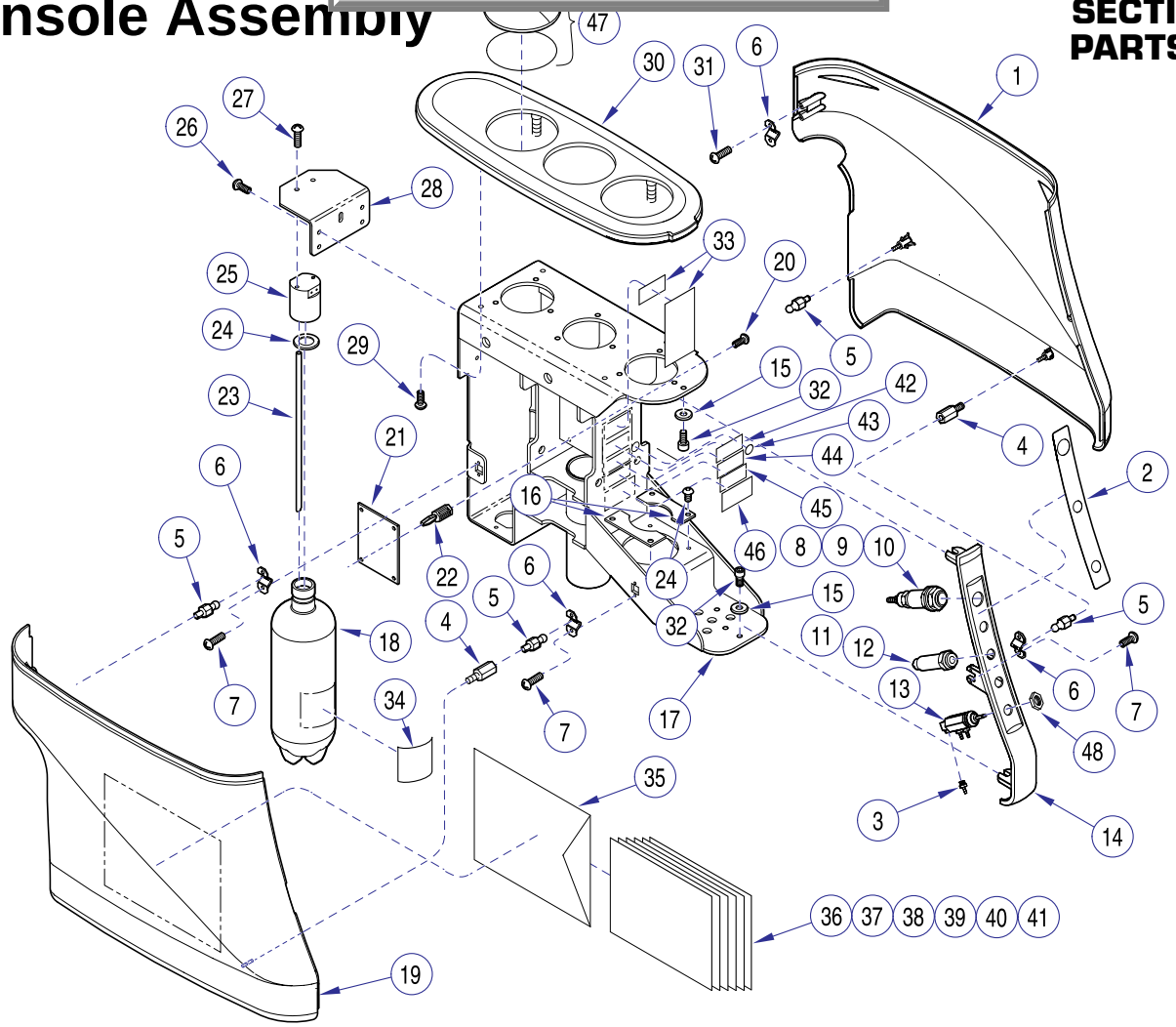
Console Assembly



KA938602

	Part No.	Description	Qty
	029-2494-00	Console Assembly (Includes Items 1 thru 32)	1
1	• 053-1126-01	• Console Cover (Left Hand)	1
2	• 061-0778-00	• Console Front Label	1
3	•	• Connector (Refer to "Connectors & Fittings")	AR
4	• 016-0873-00	• Male-Female Standoff	4
5	• 016-0849-00	• Ball Stud	7
6	• 042-0193-00	• Ball Stud Fastener	7
7	• 040-0006-97	• Screw	12
8	• 122181	• Washer	1
9	• 121107	• Panel Mnt. Tube Coupler w/Shutoff	1
10	• 121108	• Kwik-Connect Adapter	1
11	• 121807	• Washer	1
12	• 137258	• Panel Mnt. Tube Coupler w/Shut-off	1
13	• 029-2496-01	• Toggle Switch Assembly	1
14	• 020-0213-50	• Front Console	1
15	• 045-0001-16	• Washer	2
16	• 120995-50	• Umbilical Retainer Plate	2
17	• 030-1263-50	• Console Frame Weldment	1
18	• 122302	• 750ml. Water Bottle	1
	122830	2l Water Bottle (optional)	1
19	• 053-1125-01	• Console Cover (Right Hand)	1
20	• 040-0006-22	• Screw	4
21	• 015-1458-00	• Unit Connection Board	1
22	• 015-1474-00	• PC Board Standoff	4
23	• 177524	• Tubing	AR
24	• 120393	• Gasket	1

	Part No.	Description	Qty
25	• 153276	• Bottle Cap Assembly	1
26	• 040-0010-109	• Screw	4
27	• 120385	• Screw	2
28	• 050-4872-00	• Water Bottle Bracket	1
29	• 040-0010-140	• Screw	4
30	• 053-1124-01	• Console Top Cover	1
31	• 042-0168-00	• Screw	2
32	• 040-0250-07	• Bolt	2
33		Serial Number Label	1
	061-0666-00	Clear Laminate	1
34	TPW1592	Water Bottle Label	1
35	016-0882-00	Vinyl Label Pouch	1
36	003-1125-00	Console Flow Diagram	1
37	003-1127-00	Console Wiring Diagram	1
38	003-1129-00	Console Installation Guide	1
39	003-1132-00	Asst. Inst. Flow Diagram	1
40	003-1133-00	Cuspidor Flow Diagram	1
41	003-1131-00	Instrument Head Flow Diagram	1
42	061-0735-00	ETL Label	1
43	061-0652-00	Type B Equipment Label	1
44	061-0802-00	Electrical Input Rating Label	1
45	061-0733-00	CE0088 Label	1
46	061-0792-00	CE Authorized Rep Label	1
47	029-2614-00	Cap Assembly (includes #46 & #47)	
	• 057-0617-50	• Cap	AR
	• 014-0176-48	• O-ring	AR
48	120388	Trim Nut	1

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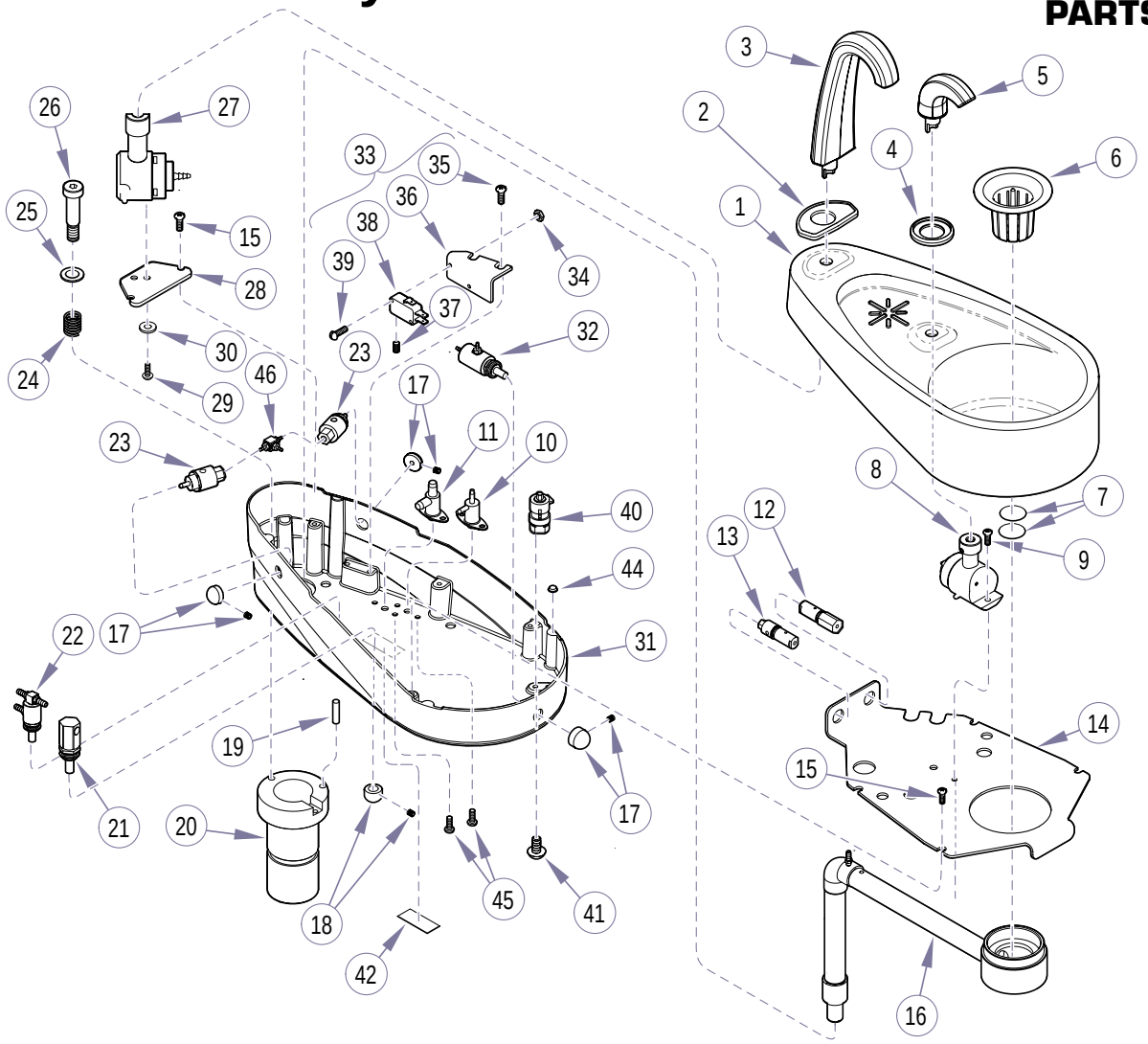
Cuspidor Assembly



KA937602i

Item	Part No.	Description	Qty
	029-2456-00	Cuspidor Assy (incl. items1 thru 45)	1
1	• 029-2457-00	• Cuspidor Bowl (includes item 7)	1
2	• 053-1118-00	• Cup Fill Gasket	1
3	• 053-1228-00	• Cup Fill Spout	1
4	• 053-1119-00	• Bowl Rinse Gasket	1
5	• 053-1229-00	• Bowl Flush Spout	1
6	• 150671	• Deep Bowl Cuspidor Gold Trap Kit	1
7	• 122640	• O-Ring	2
8	• 029-2489-00	• Bowl Flush Valve Assembly	1
9	• 040-0010-145	• Screw	1
10	• 016-0921-01	• Air Control Valve	1
11	• 016-0921-00	• Air Control Valve	1
12	• 029-2545-00	• 2 Way N.O. Pilot Valve Assembly	1
13	• 029-2546-00	• 3 Way N.C. Pilot Valve Assembly	1
14	• 050-4806-50	• Cuspidor Mount Bracket	1
15	• 040-0010-109	• Screw	6
16	• 029-2487-00	• Cuspidor Drain Assembly	1
17	• 029-2529-00	• Valve Knob Assy. (Incl. set screw)	3
	• • P11836	• • Set Screw	1
18	•029-2529-01	• Valve Knob Assm.(Incl. Set Screw)	2
	• • P11836	• • Set Screw	2
19	• 042-0001-04	• Pin	1
20	• 052-0368-50	• Cuspidor Mount Post	1
21	• 029-2556-00	• Pinch Valve Assembly	1
22	• 029-2449-02	• Air Control Valve	1
23	• 029-2547-00	• 3 Way N.C. Poppet Valve Assembly	2
24	• 025-0042-10	• Compression Spring	1
25	• 045-0001-118	• Washer	1
26	• 040-0250-141	• Shoulder Screw	1
27	• 029-2490-00	• Cup Fill Valve Assembly	1
28	• 050-4866-50	• Cup Fill Valve Bracket	1
29	• 105480	• Screw	1
30	• 045-0001-124	• Washer	1
31	• 020-0209-50	• Cuspidor Base	1
32	• 029-2453-00	• Purge Control Valve Assembly	1
33	• 029-2589-00	• Cuspidor Limit Switch Assembly	1
34	• • 041-0004-00	• • Nut	2
35	• • 040-0010-21	• • Screw	2
36	• • 050-4867-50	• • Switch Bracket	1
37	• • 040-0250-60	• • Set Screw	1
38	• • 146978	• • Switch	1
39	• • 040-0004-09	• • Screw	2
40	• 029-2548-00	• Electronic / Pneumatic Valve Assy	1
41	• • 040-0006-64	• • Screw	2
42	• 061-0788-00	• Cuspidor Water Adjustment Label	1
43	• 003-1133-00	• Cuspidor Flow Diagram (not shown)	1
44	• 053-0013-00	• Bumper	4
45	• 040-0004-22	• Screw	4
46	029-2544-00	Shuttle Valve	1

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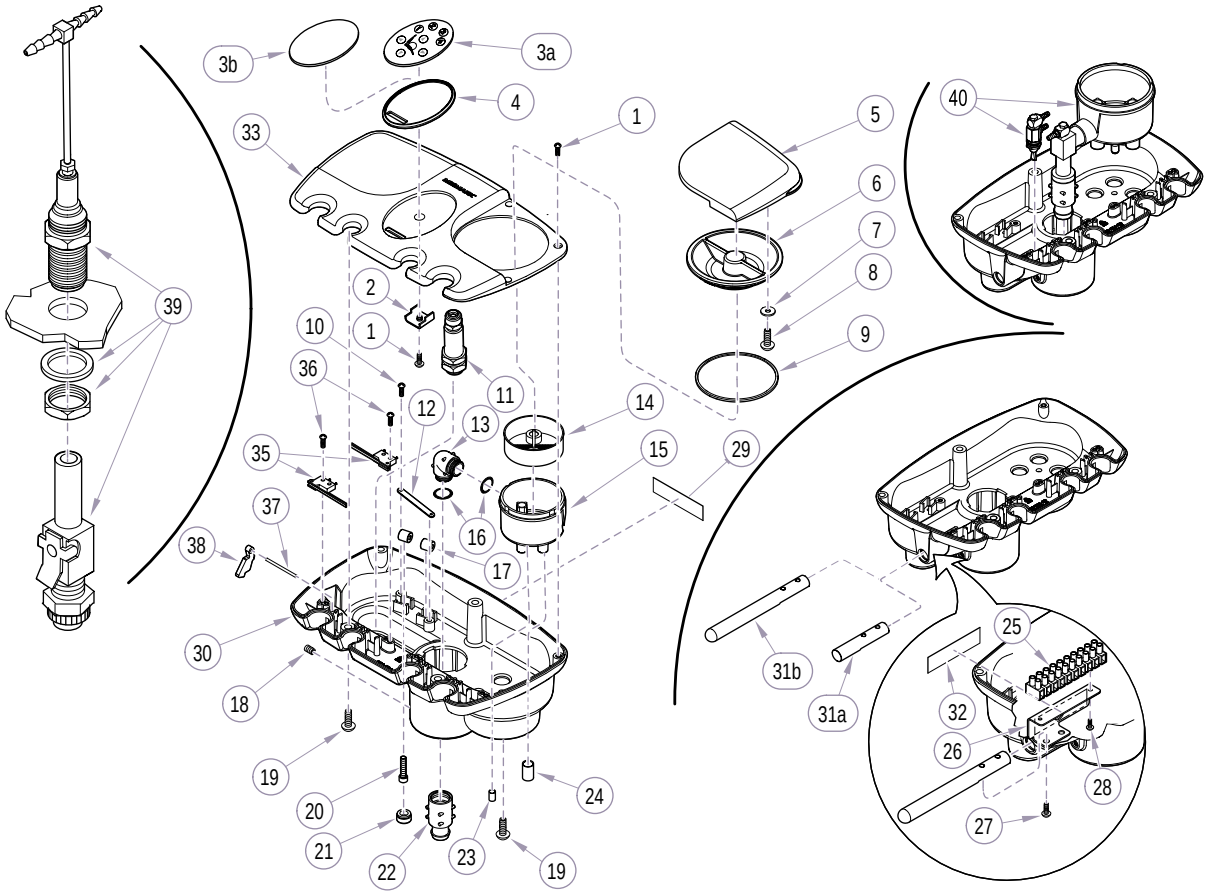
Assistant's Unit Assembly



KA949401i

Used on units with Serial Numbers NV1000 to NV2264

Item	Part No.	Description	Qty
	029-2525-00	Assistant's Instrument Head Assy. w/o Switches (incl. items 1 thru 33)	1
	029-2525-01	Assistant's Instrument Head Assy. w/ Switches (incl. items 1 thru 38)	1
1	• 040-0006-98	• Screw	2
2	• 050-4980-50	• Middle Bracket	1
3a	• 002-0672-01	• Touch Panel (incl. item 4)	1
3b	• 029-2607-00	• Bezel Cover (incl. item 4)	1
4	• • 053-1071-01	• • Control Bezel	1
5	• 053-1152-01	• Solids Collector Cover	1
6	• 053-1107-01	• Top Solids Collector Cover	1
7	• 045-0001-50	• Washer	3
8	• 040-0004-00	• Screw	3
9	• 014-0372-00	• Solids Collector O-ring	1
10	• 042-0168-04	• Screw	2
11	• 137258	• Tube Coupler W/Shut-Off	1
12	• 050-5773-50	• Pinch Valve Retainer	1
13	• 053-1156-01	• 90 Degree Coupling	1
14	• 053-1106-00	• Solids Collector	1
15	• 053-1155-01	• Solids Collector Housing	1
16	• 014-0176-07	• O-Ring	2
17	• 117736	• Tube Pinch Collar	2
18	• 121148	• Set Screw	1
19	• 040-0010-144	• Screw	5
20	• 040-0004-14	• Cap Screw	2
21	• 120599	• Thumb Screw Knob	2
22	• 002-0730-00	• Assistant Unit Connector Kit	1
23	• 117624	• Toggle Cap	1
24	• P15280	• Solids Collector Sleeve Cap	3
25	• 015-1457-00	• Terminal Block	1
26	• 050-4925-50	• Terminal Block Support	1
27	• 040-0010-96	• Screw	2
28	• 040-0006-80	• Screw	2
29	• 061-0775-00	• Water / Air Adjustment Label	1
30	• 053-1154-02	• Assistants Instrument Head Bottom (Used on 029-2525-00 Assembly)	1
	• 053-1154-03	• Assistants Instrument Head Bottom (Used on 029-2525-01 Assembly)	1
31a	• 057-0622-50	• Plug Bar	1
31b	• 057-0565-50	• Accessory Instrument Bar	1
32	• 061-0795-00	• Terminal Strip Label	1
33	• 053-1153-01	• Assistant Instrument Head Top	1
34	• 003-1132-00	• Flow Diagram, Assistant's Instrument Head *(not shown)*	1
35	• 015-1454-00	• Vacuum Switch Assembly	1
36	• 040-0002-00	• Screw	6
37	• 057-0536-00	• Pivot Pin	4
38	• 053-1077-00	• Lever	4
39	029-2770-00	Air Quick Connect Assembly - Optional (Incl. Tubing & Fittings [Not Shown])	Ref
40		Assistant's Instr. Air Operated Vacuum System - Optional (Refer to "Air Operated Vacuum System")	Ref

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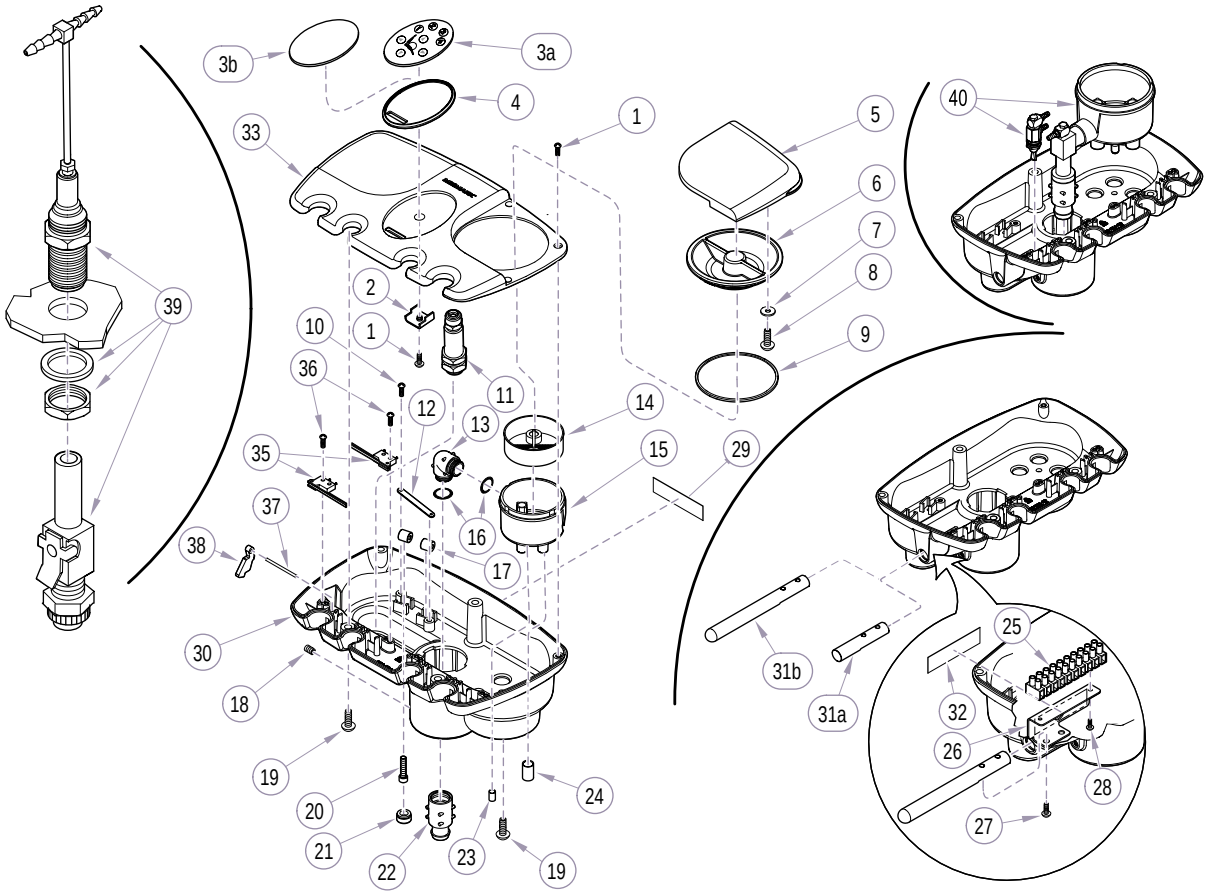
Assistant's Unit Assembly



KA949401i

Used on units with Serial Numbers NV2265 to present

Item	Part No.	Description	Qty
	029-2525-00	Assistant's Instrument Head Assy. w/o Switches (incl. items 1 thru 33)	1
	029-2525-01	Assistant's Instrument Head Assy. w/ Switches (incl. items 1 thru 38)	1
1	• 040-0006-98	• Screw	2
2	• 050-4980-50	• Middle Bracket	1
3a	• 002-0672-01	• Touch Panel (incl. item 4)	1
3b	• 029-2607-00	• Bezel Cover (incl. item 4)	1
4	• • 053-1071-01	• • Control Bezel	1
5	• 053-1152-01	• Solids Collector Cover	1
6	• 053-1107-01	• Top Solids Collector Cover	1
7	• 045-0001-50	• Washer	3
8	• 040-0004-00	• Screw	3
9	• 014-0372-00	• Solids Collector O-ring	1
10	• 042-0168-04	• Screw	2
11	• 137258	• Tube Coupler W/Shut-Off	1
12	• 050-5773-50	• Pinch Valve Retainer	1
13	• 053-1156-01	• 90 Degree Coupling	1
14	• 053-1106-00	• Solids Collector	1
15	• 053-1155-01	• Solids Collector Housing	1
16	• 014-0176-07	• O-Ring	2
17	• 117736	• Tube Pinch Collar	2
18	• 121148	• Set Screw	1
19	• 040-0010-144	• Screw	5
20	• 040-0004-14	• Cap Screw	2
21	• 120599	• Thumb Screw Knob	2
22	• 053-1307-01	• Assistant Instrument Head Connector	1
23	• 117624	• Toggle Cap	1
24	• P15280	• Solids Collector Sleeve Cap	3
25	• 015-1457-00	• Terminal Block	1
26	• 050-4925-50	• Terminal Block Support	1
27	• 040-0010-96	• Screw	2
28	• 040-0006-80	• Screw	2
29	• 061-0775-00	• Water / Air Adjustment Label	1
30	• 053-1154-02	• Assistants Instrument Head Bottom (Used on 029-2525-00 Assembly)	1
	• 053-1154-03	• Assistants Instrument Head Bottom (Used on 029-2525-01 Assembly)	1
31a	• 057-0622-50	• Plug Bar	1
31b	• 057-0565-50	• Accessory Instrument Bar	1
32	• 061-0795-00	• Terminal Strip Label	1
33	• 053-1153-01	• Assistant Instrument Head Top	1
34	• 003-1132-00	• Flow Diagram, Assistant's Instrument Head *(not shown)*	1
35	• 015-1454-00	• Vacuum Switch Assembly	1
36	• 040-0002-00	• Screw	6
37	• 057-0536-00	• Pivot Pin	3
38	• 053-1077-00	• Lever	3
39	029-2770-00	Air Quick Connect Assembly - Optional (Incl. Tubing & Fittings [Not Shown])	Ref
40		Assistant's Instr. Air Operated Vacuum System - Optional (Refer to "Air Operated Vacuum System")	Ref

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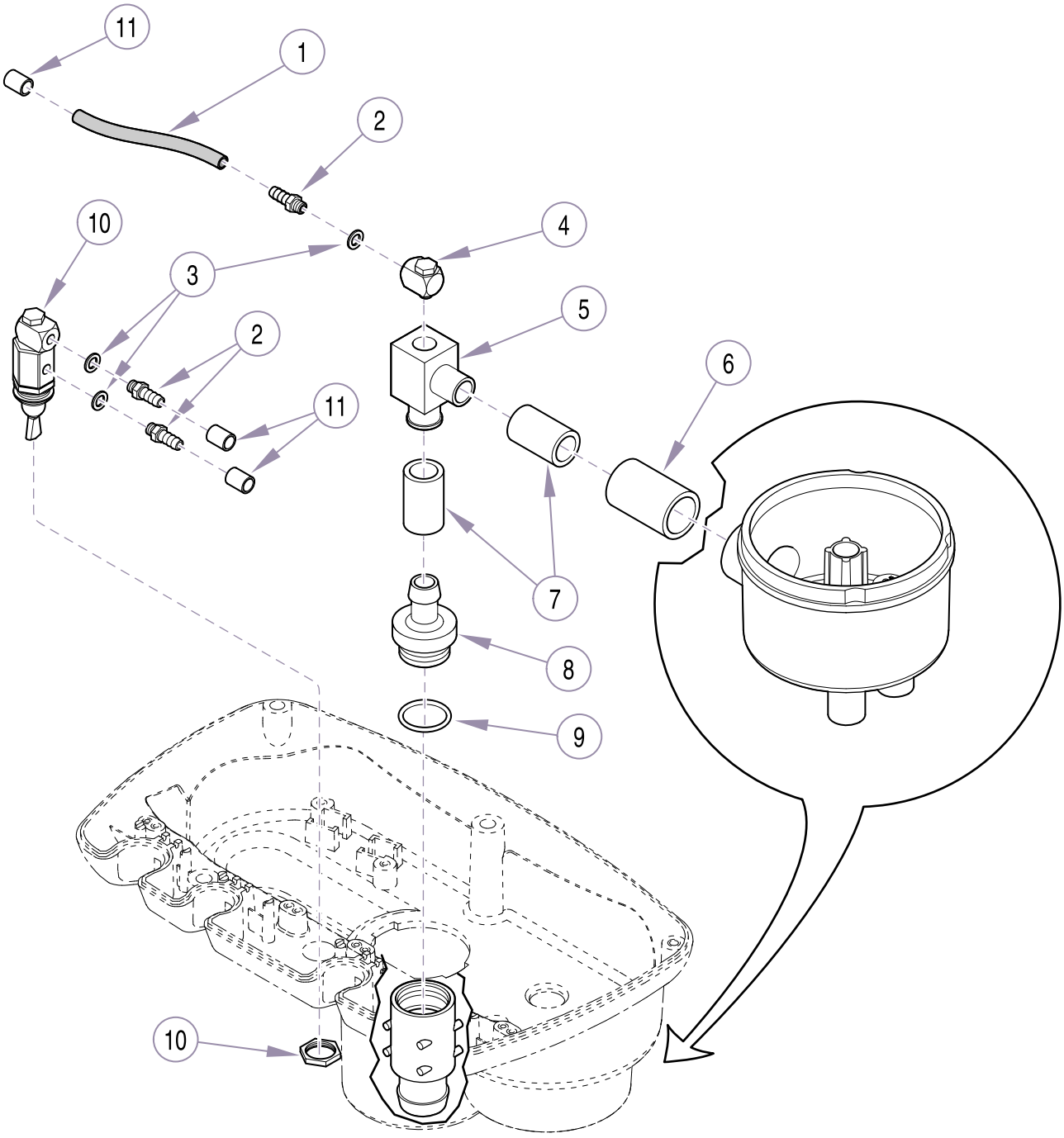
Air Operated Vacuum System



KAxxxx00i

Item	Part No.	Description	Qty
	029-2804-00	Assistant's Instruments Air Operated Vacuum System [Includes Items 1 thru 11])	Ref
1	• 275263	• Yellow Tubing	AR
2	• 117349	• Fitting	3
3	• 117660	• Gasket	3
4	• 016-0888-00	• Fitting, 90 Degree Swivel	2
5	• 123066	• Air Venturi Valve	1
6	• R4786	• 5/8 in. DIA Clear Tubing	AR
7	• R4761	• 7/16 in. DIA Clear PVC	AR
8	• 057-0710-00	• Connector	1
9	• 014-0176-07	• O-Ring	1
10	• 123061	• 3-Way ON / OFF Toggle Valve	1
11	• 117480	• 1/4 in. Sleve Clamp	3

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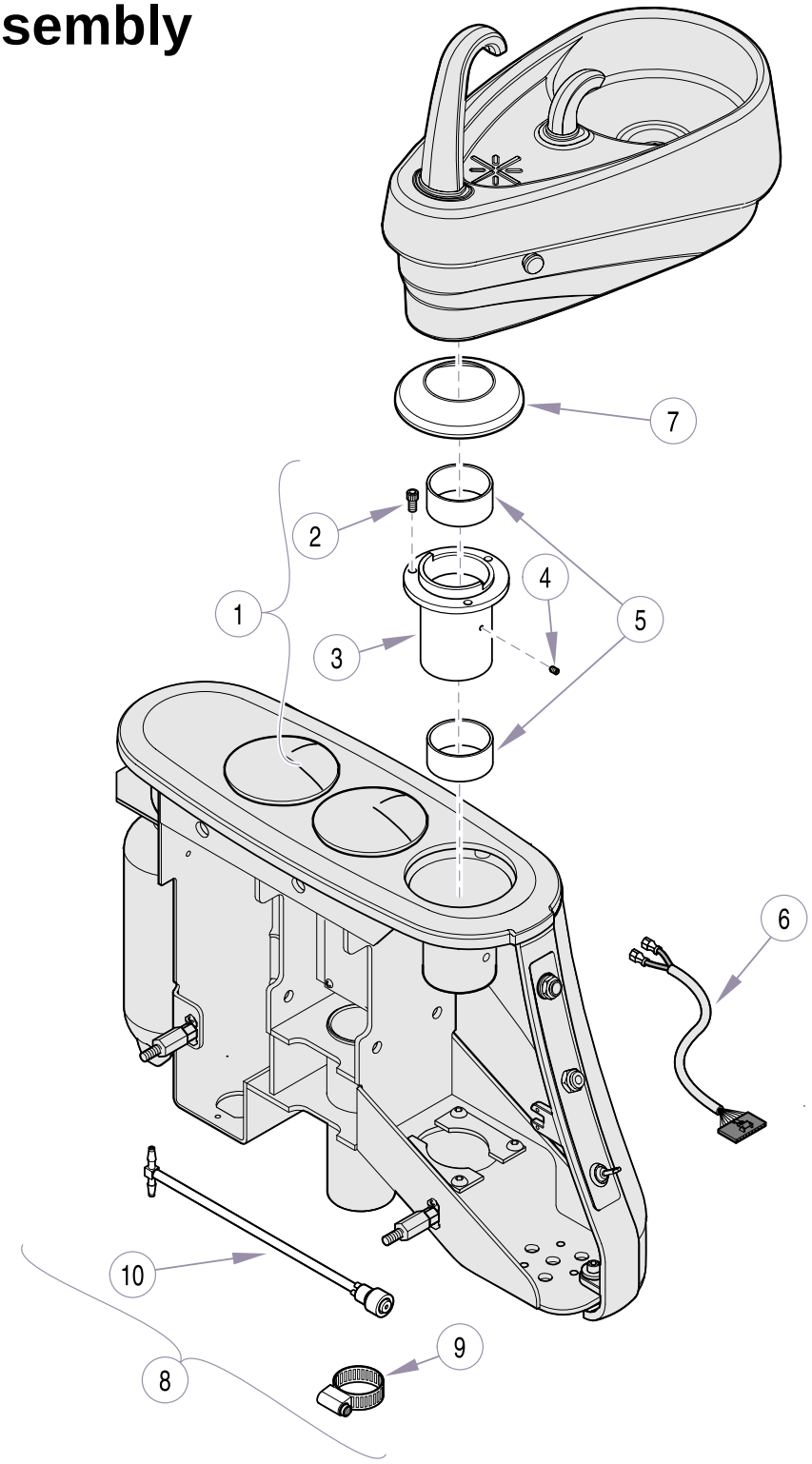
Cuspidor Console Mount Assembly



KA978701i

Item	Part No.	Description	Qty
	029-2601-00	Cuspidor Console Mount Assembly (includes items 1 thru 8)	1
1	• 029-2514-00	• Cuspidor Bearing Assembly (includes items 2 thru 5)	1
2	• • 040-0250-07	• • Screw	3
3	• • 057-0577-00	• • Plated Cuspidor Bearing Housing	1
4	• • 121428	• • Set Screw	2
5	• • 016-0149-21	• • Iglide Bearing	2
6	• 015-1462-00	• Wiring Harness	1
7	• 053-1220-01	• Cuspidor Trim Ring	1
8	• 029-2651-00	• Console Mounted Cuspidor Install. Kit (incl. items 9 & 10)	1
9	• • 104499	• • Clamp	1
10	• •	• • Yellow Tubing / Fitting Assy	1

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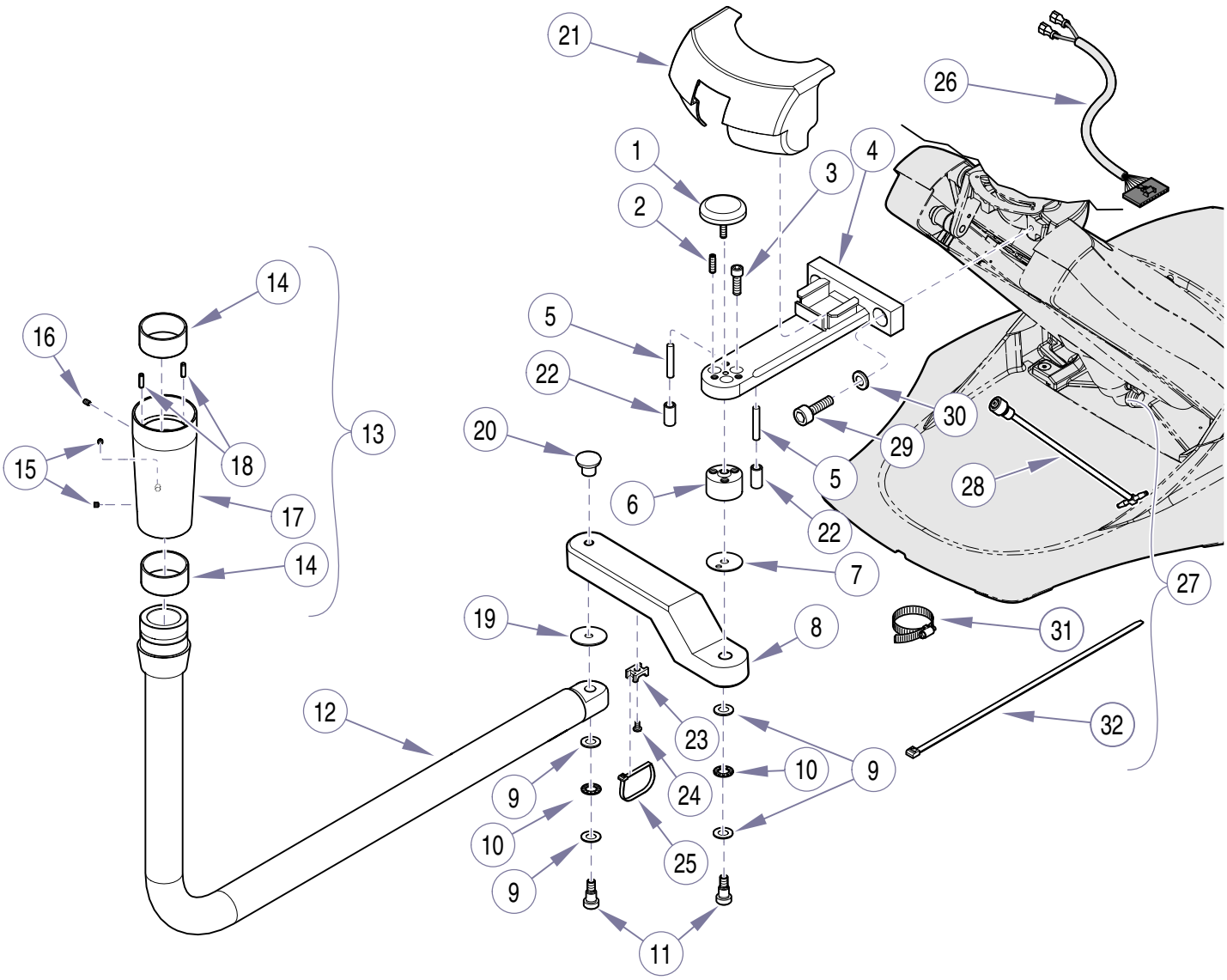
L/R Cuspidor Arm Assembly



KA992101i

Item	Part No.	Description	Qty
	029-2527-00	L/R Cuspidor Arm Assembly (Includes Items 1 thru 25)	1
1	• 030-1285-50	• Assistant's L/R Arm Cover	1
2	• 040-0250-12	• Screw	3
3	• 040-0375-76	• Screw	3
4	• 153354	• L/R Extension Plate	1
5	• 042-0157-03	• Groove Pin	2
6	• 057-0589-50	• Pivot Arm Adapter	1
7	• 053-1116-00	• Washer	4
8	• 051-0930-50	• L/R Cuspidor Chair Mount Arm	1
9	• 120712	• Washer	4
10	• 110207	• Bearing	2
11	• 117471	• Screw	2
12	• 030-1276-50	• L/R Cuspidor Tube Weldment	1
13	• 029-2528-00	• L/R Cuspidor Bearing Assembly (Includes Items14 thru 18)	1
14	• • 016-0149-21	• • Iglide Bearing	1
15	• • 106753	• • Screw	2
16	• • 121428	• • Screw	1
17	• • 052-0377-50	• • L/R Cuspidor Bearing Housing	1
18	• • 042-0001-04	• • Roll Pin	2
19	• 053-1159-00	• Thrust Washer	1
20	• 053-1333-50	• Hole Plug	1
21	• 123053	• Back Cover	1
22	• 053-0268-04	• End Cap	2
23	• 016-0889-00	• Cable Tie Bracket	1
24	• 040-0010-109	• Screw	1
25	• 102308	• Cable Tie	1
26	015-1493-00	Wiring Harness	1
27	029-2651-01	Installation Hardware Kit (includes items 28 thru 32)	1
28	•	• Yellow Tubing / Fitting Assembly	1
29	• 040-0375-76	• Screw	2
30	• 045-0001-09	• Lock Washer	2
31	• 015-0013-03	• Cable Tie	2
32	• 104499	• Clamp	1

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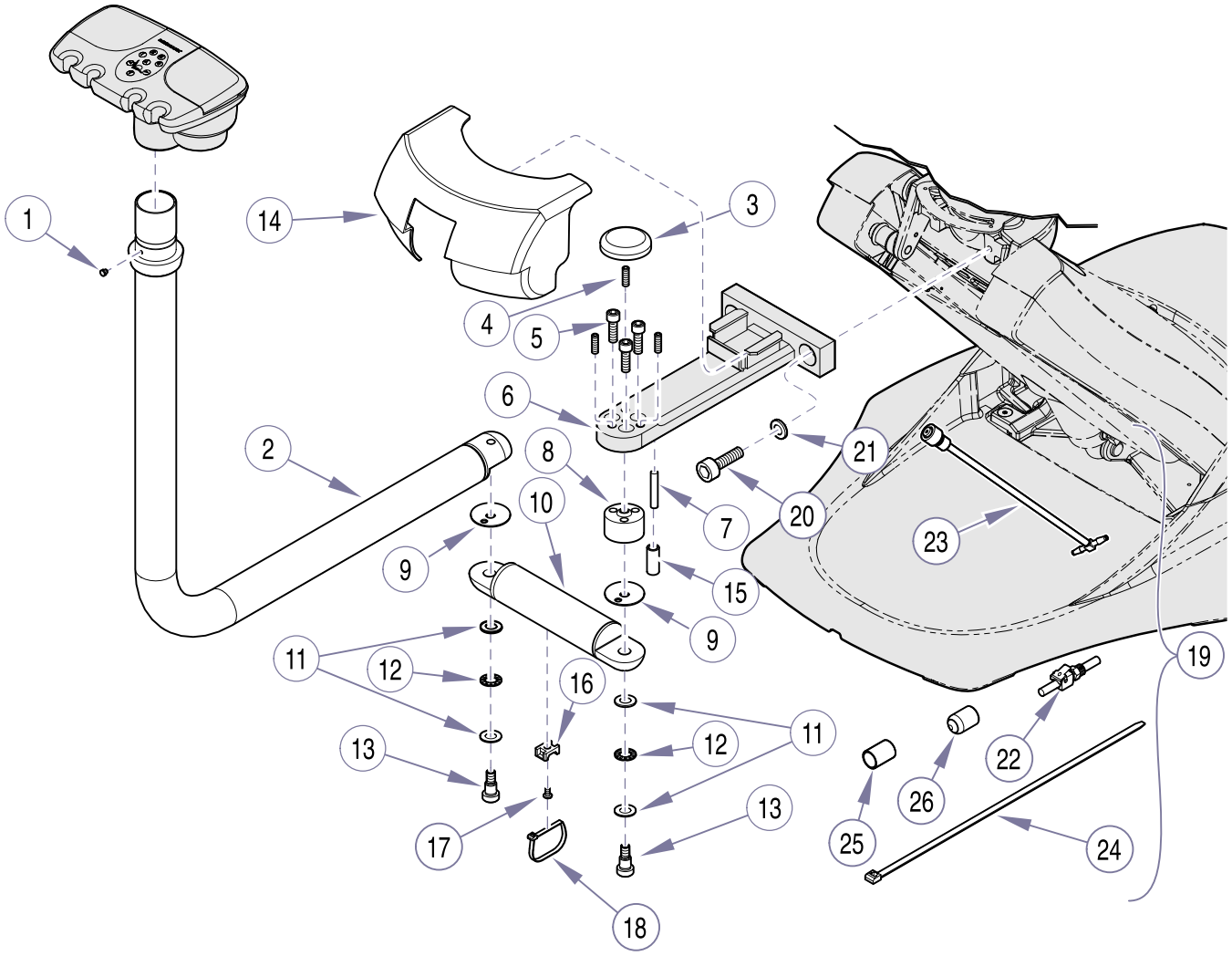
Assistant's Instrument Arm - *Rear Mounted*



NOTE:
This assembly is used with console mounted operatories and L/R operatories without a cuspidor.

KA949301i

Item	Part No.	Description	Qty
	029-2460-00	Assistant's Instrument Arm- *Rear Mt.* (includes items 1 thru 18)	
1	• 040-0008-74	• Set Screw	1
2	• 030-1268-50	• Radius Arm Weldment	1
3	• 030-1285-50	• Cover	1
4	• 040-0250-12	• Leveling Screw	3
5	• 040-0375-76	• Bolt	3
6	• 153354	• L/R Extension Plate	1
7	• 042-0157-03	• Groove Pin	2
8	• 057-0589-50	• Pivot Arm Adaptor	1
9	• 053-1116-00	• Thrust Washer	2
10	• 030-1270-50	• Bracket Mount-Radius Arm Weldment	1
11	• 120712	• Washer	4
12	• 110207	• Needle Thrust Bearing	2
13	• 117471	• Shoulder Bolt	1
14	• 123053	• Back Cover	1
15	• 053-0268-04	• End Cap	2
16	• 016-0889-00	• Cable Tie Mounting Bracket	1
17	• 040-0010-109	• Screw	1
18	• 102308	• Cable Tie	1
19	029-2649-00	Installation Hardware Kit (includes items 20 thru 26)	1
20	• 040-0375-76	• Screw	2
21	• 045-0001-09	• Lock Washer	2
22	• 137259	• Water Quick Disconnect Coupling	1
23	•	• Yellow Tubing / Fitting Assy.	1
24	• 015-0013-03	• Cable Tie	2
25	• P15280	• Cap Sleeve	1
26	• 117624	• Toggle Cap	1
27		Umbilical - *not shown* (Refer to "Umbilical Assemblies")	Ref

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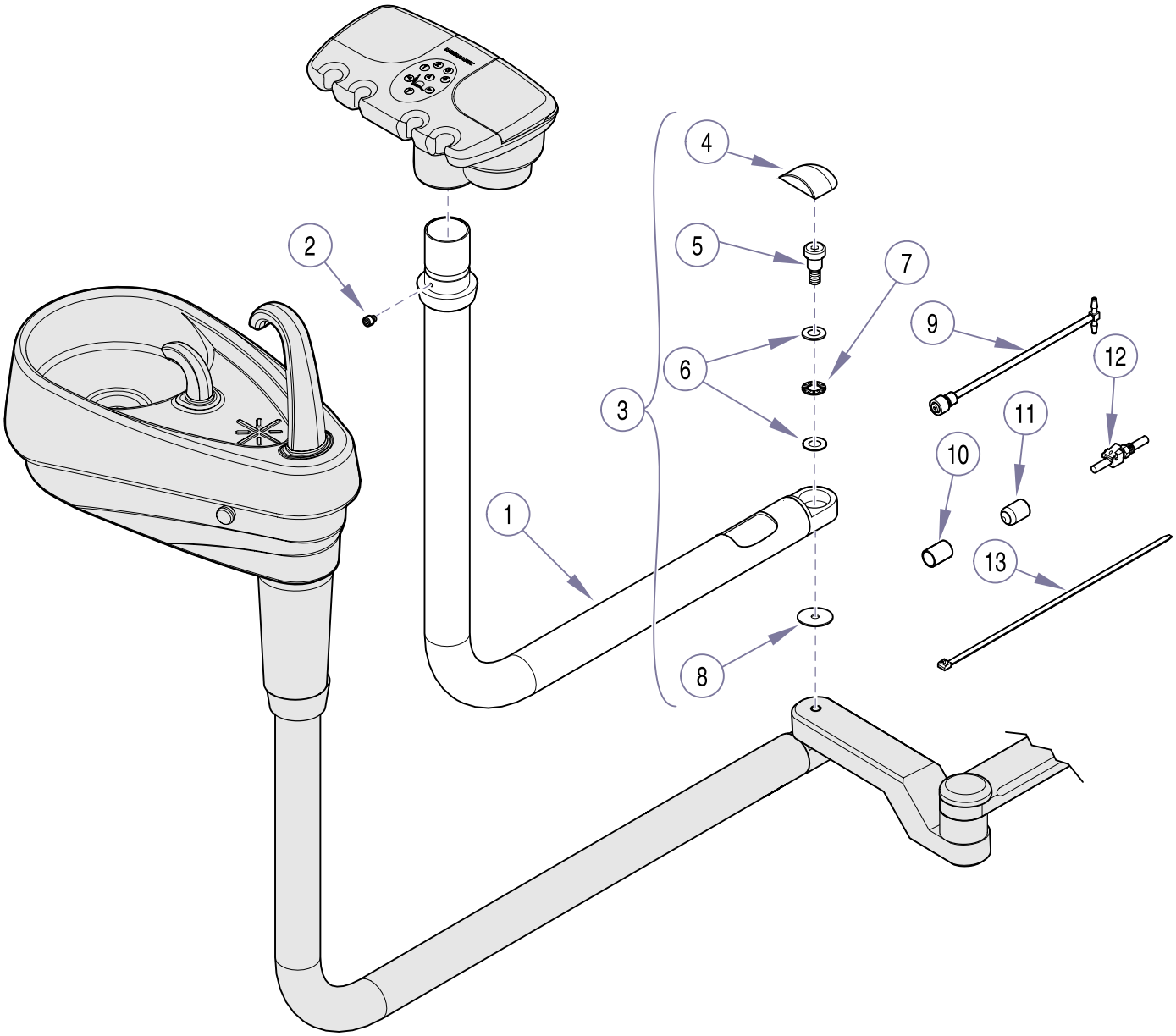
Assistant's Instrument Arm
- Rear Mounted with L/R Cuspidor



KA992200i

Item	Part No.	Description	Qty
	029-2527-01	Assistant's Instrument Arm Assy. (includes items 1 & 2)	1
1	• 030-1277-50	• L/R Assistant's Tube Weldment	1
2	• 040-0008-74	• Screw	1
3	029-2649-01	Installation Hardware Kit (includes items 4 thru 13)	1
4	• 029-2558-00	• Pivot Cover Assembly (Add Adhesive CA100)	1
5	• 117471	• Screw	1
6	• 120712	• Washer	2
7	• 110207	• Bearing	1
8	• 053-1159-00	• Thrust Washer	1
9	•	• Yellow Tubing / Fitting Assy.	1
10	• 117624	• Toggle Cap	1
11	• P15280	• Sleeve Cap	1
12	• 137259	• Water Quick Disconnect Coupling	1
13	• 102308	• Cable Tie	2
14		Umbilical - *not shown* (Refer to "Umbilical Assemblies")	Ref

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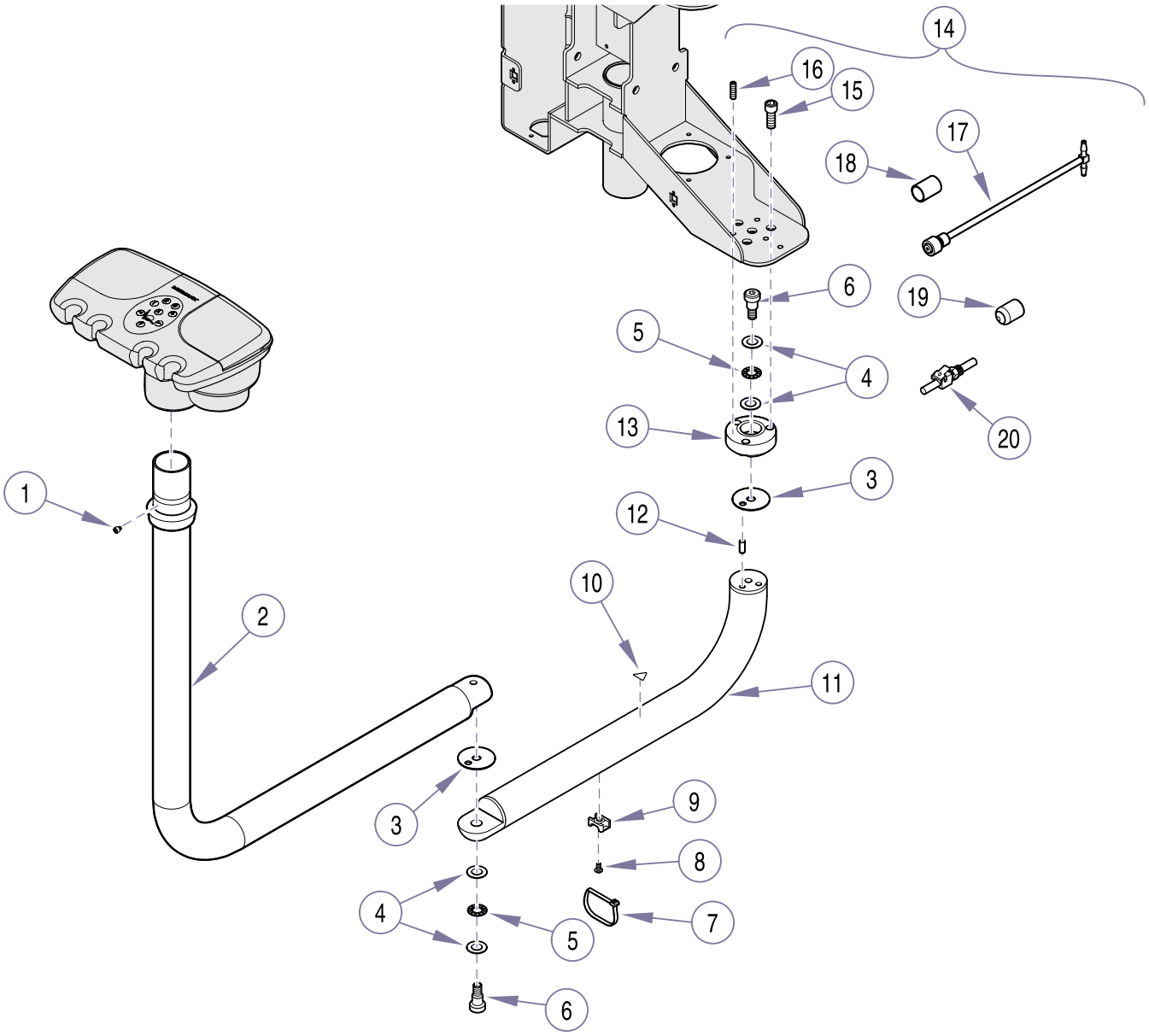
Assistant's Instrument Arm
- *Console Mounted*



KA977700i

Used on Units Built Before 8/30/2003

Item	Part No.	Description	Qty
	029-2478-00	Assistant Instrument Arm- *Console Mt.* (includes items 1 thru 13)	Ref
1	• 040-0008-74	• Sockethead Cap Screw	1
2	• 030-1268-50	• Radius Arm Weldment	1
3	• 053-1116-00	• Washer	2
4	• 120712	• Washer	4
5	• 110207	• Needle Thrust Bearing	2
6	• 117471	• Shoulder-Coated Screw	2
7	• 102308	• Cable Tie	1
8	• 040-0010-109	• Screw	1
9	• 016-0889-00	• Cable Tie Mounting Platform	1
10	• 061-0654-00	• Caution Label	1
11	• 030-1269-50	• Radius Arm Weldment	1
12	• 042-0002-03	• Dowel Pin	1
13	• 057-0595-50	• Adapter Pivot Arm	1
14	029-2649-02	Installation Hardware Kit (includes items 15 thru 20)	1
15	• 040-0375-76	• Screw	3
16	• 040-0250-12	• Set Screw	3
17	•	• Yellow Tubing / Fitting Assy	1
18	• P15280	• Sleeve Cap	1
19	• 117624	• Toggle Cap	1
20	• 137259	• Water Quick Disconnect Coupling	1
21		Umbilical - *not shown* (Refer to "Umbilical Assemblies")	Ref

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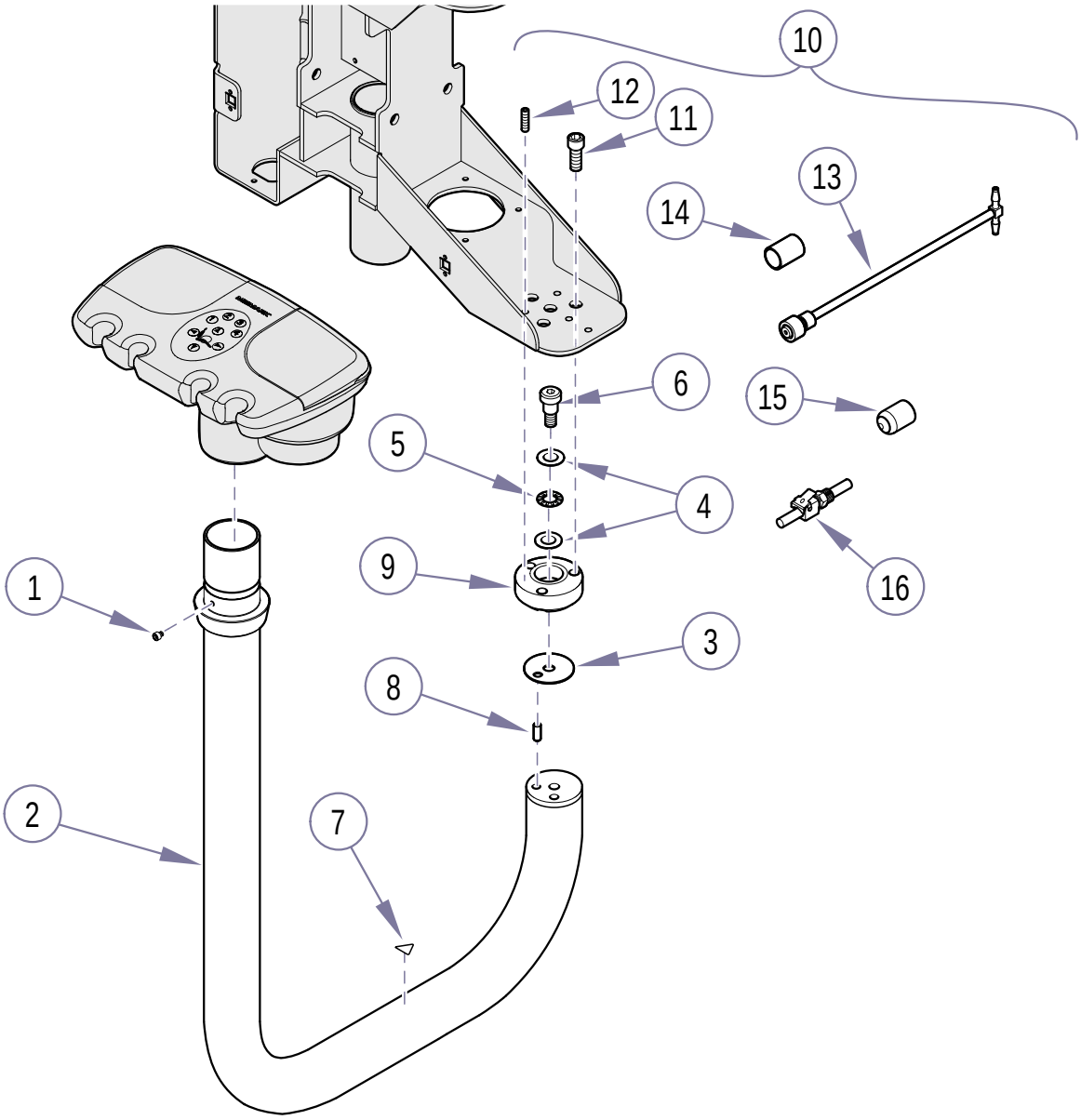
Assistant's Instrument Arm - *Console Mounted*



DA139300i

Used on Units Built After 8/30/2003

Item	Part No.	Description	Qty
	029-3214-00	Assistant Instrument Arm- *Console Mt.* (includes items 1 thru 9)	Ref
1	• 040-0008-74	• Sockethead Cap Screw	1
2	• 030-1496-50	• Radius Arm Weldment	1
3	• 053-1116-00	• Washer	1
4	• 120712	• Washer	2
5	• 110207	• Needle Thrust Bearing	1
6	• 117471	• Shoulder-Coated Screw	1
7	• 061-0654-00	• Caution Label	1
8	• 042-0002-03	• Dowel Pin	1
9	• 057-0595-50	• Adapter Pivot Arm	1
10	029-2649-02	Installation Hardware Kit (includes items 15 thru 20)	1
11	• 040-0375-76	• Screw	3
12	• 040-0250-12	• Set Screw	3
13	•	• Yellow Tubing / Fitting Assy	1
14	• P15280	• Sleeve Cap	1
15	• 117624	• Toggle Cap	1
16	• 137259	• Water Quick Disconnect Coupling	1
17		Umbilical - *not shown* (Refer to "Umbilical Assemblies")	Ref

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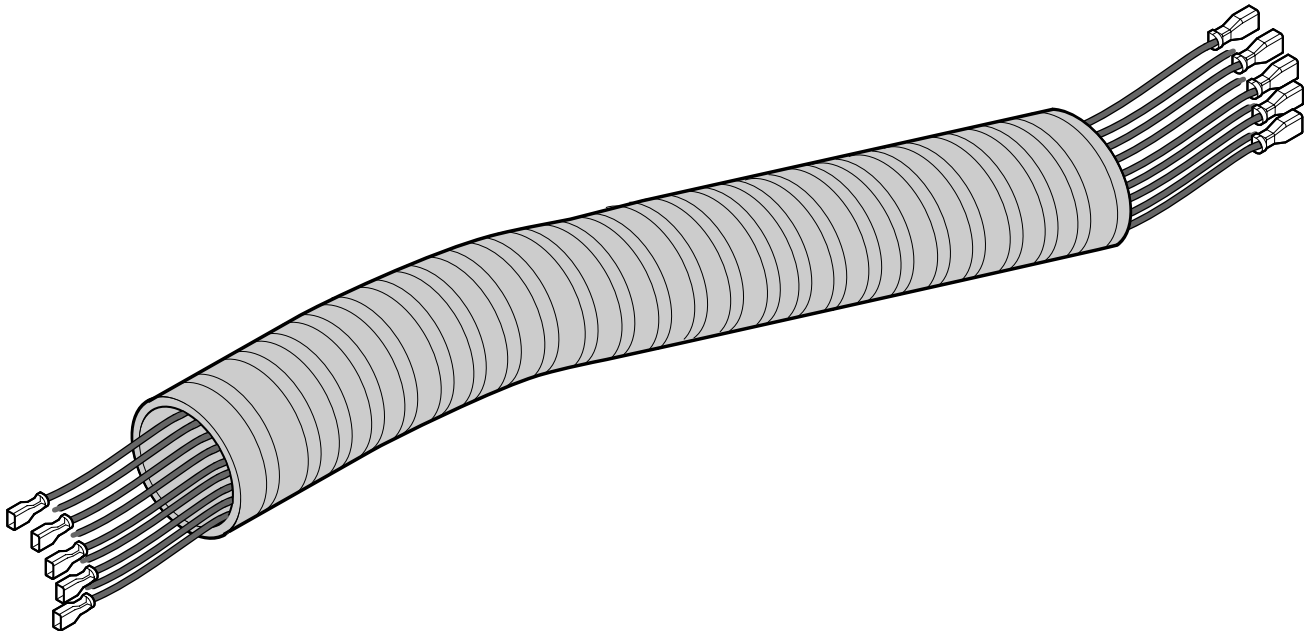
Umbilical Assemblies



KA992000i

Description	Assembly Number (Includes all tubing, wiring, connectors, and protective sleeve)
Console Operatory Chair Umbilical	029-2580-00
L/R Operatory Chair Umbilical	029-2581-00
Rear Mounted Assistant's Unit Umbilical	015-1492-00
Console Mounted Assistant's Unit Umbilical	015-1494-00
Console Operatory Flex Arm Umbilical	029-2575-00
L/R Operatory Flex Arm (w/ ProCenter Delivery Unit) Umbilical	029-2576-00
L/R Operatory Flex Arm (w/ Whip Delivery Unit) Umbilical	029-2694-00
External Umbilical (J-Box to Console)	029-2579-00
Freestanding Treatment Console Delivery Unit Umbilical	029-2830-00
SIde Delivery Unit Umbilical (13.5 ft.)	029-2895-00
Side Delivery Unit Umblical (19.5 ft.)	029-2895-01
Duo-style Delivery Cart Umbilical (3 ft.)	029-3249-00
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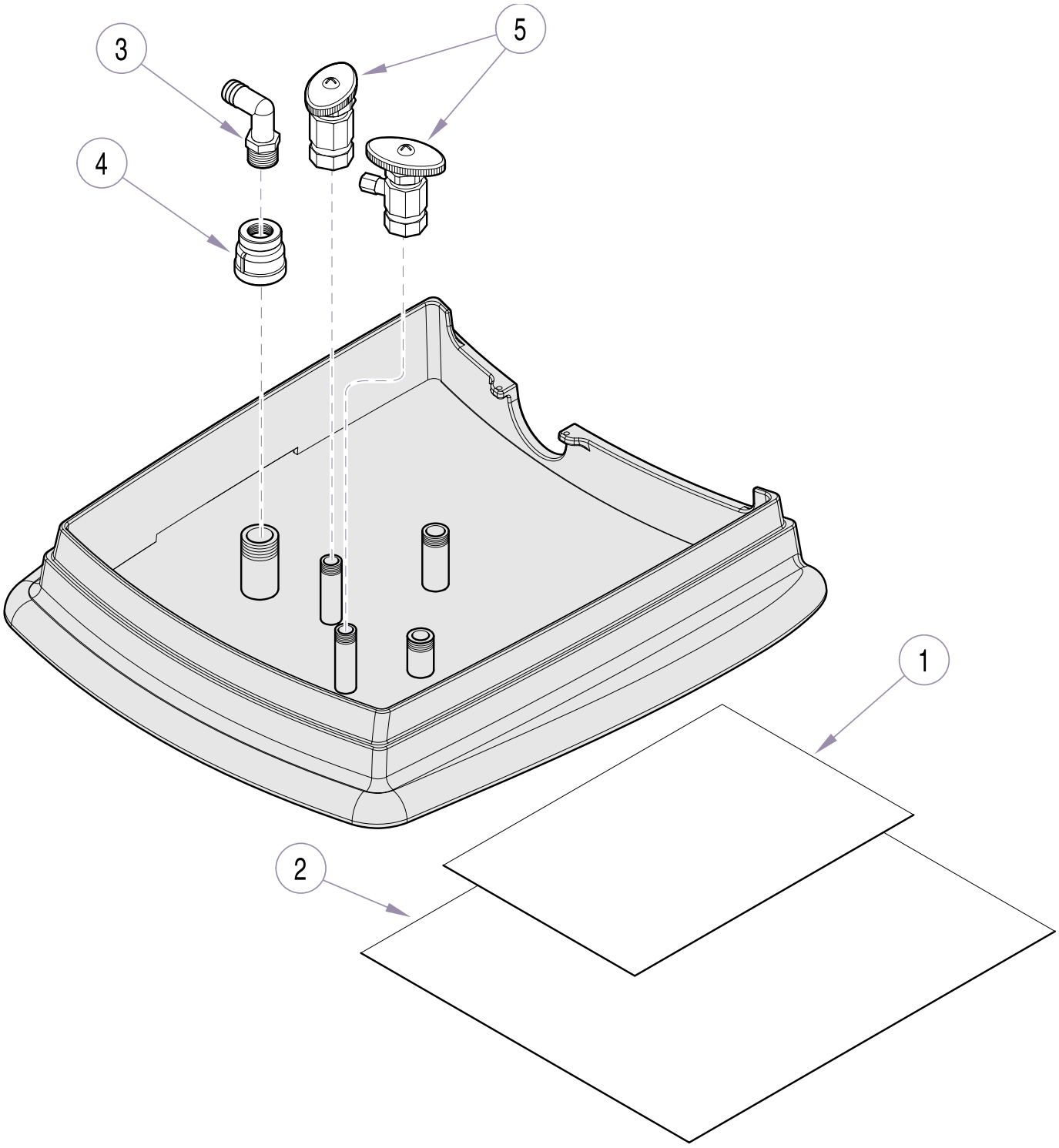
J-Box Pre-Installation Kit



KA960900

Item	Part No.	Description	Qty
	029-2596-00	J-Box Pre-Installation Kit (Includes Items 1 thru 5)	1
1	• 003-1116-00	• J-Box/Chair Pre-Installation Manual	1
2	• 003-1134-00	• J-Box Floor Template	1
3	• 105547	• Elbow	1
4	• 111506	• Adapter	1
5	• 121275	• Stop Valve	2

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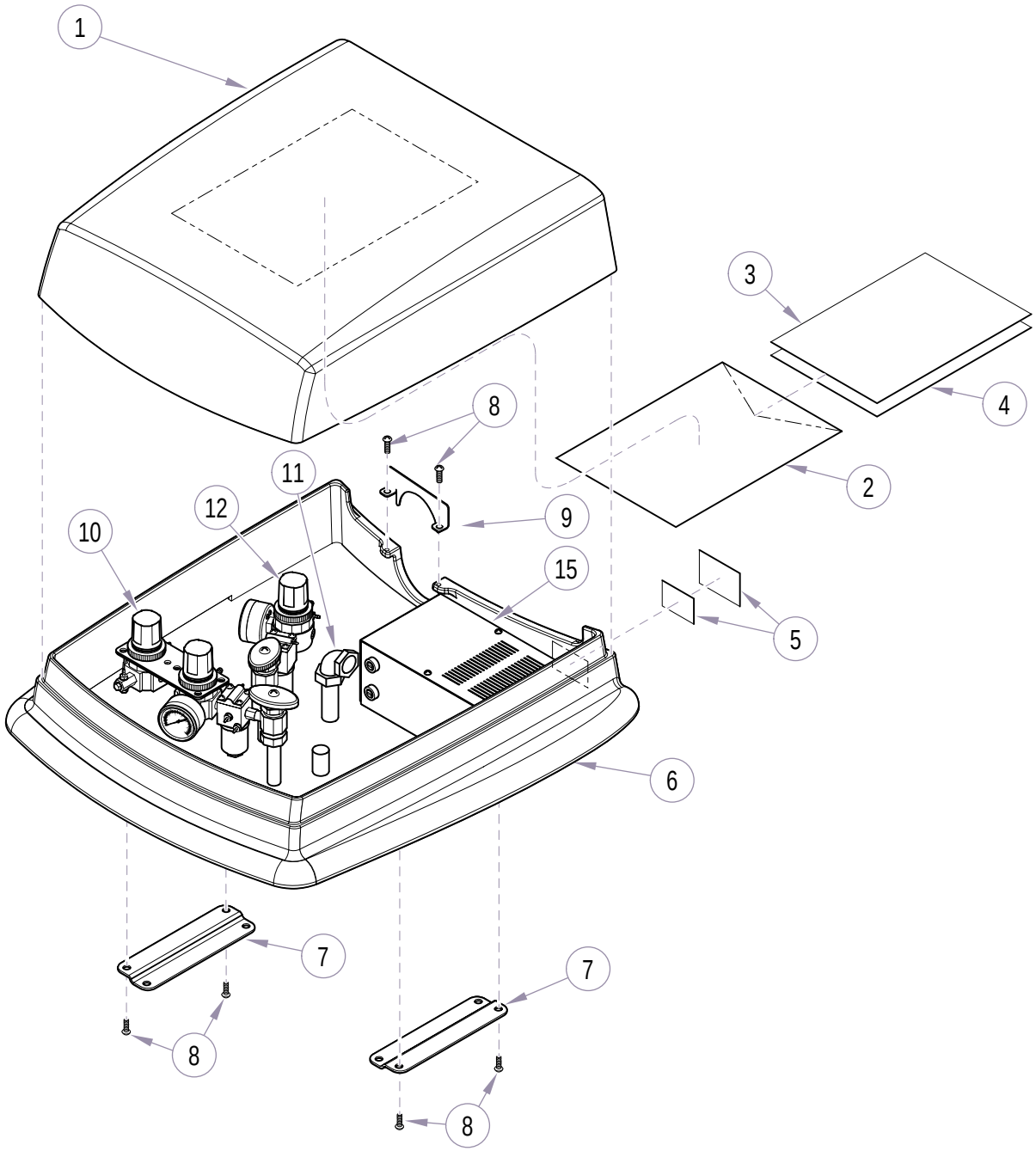
Styled Junction Box



KA955601i

Item	Part No.	Description	Qty
	153605-002	Styled Junction Box (Includes Items 1 thru 14)	1
1	• 053-1134-00	• Styled J-Box Cover	1
2	• 016-0882-00	• Vinyl Label Pouch	1
3	• 003-1130-00	• J-Box Flow Diagram	1
4	• 003-1136-00	• J-Box Wiring Diagram	1
5	•	• Serial Number Label	1
	• 061-0666-00	• Clear Laminate	1
6	• 020-0215-00	• Styled Base Housing	1
7	• 050-4928-00	• Mounting Flange	2
8	• 040-0010-47	• Screw	6
9	• 050-4927-00	• Umbilical Clamp	1
10	• 029-2480-00	• Control Assembly, Air (Refer to "Air Control Valve")	Ref
11	•	• Elbow Fitting (Refer to "J- Box Hook-Up Kit" [Not Shown])	Ref
12	• 029-2481-00	• Control Assembly, Water (Refer to "Water Control Valve")	Ref
13	• 003-1118-00	• J-Box Installation Guide (Not Shown)	1
14	• 003-1111-00	• J-Box User's Guide (Not Shown)	1
15		Power Supply Assembly (Refer to Dental Light Svc. & Parts Manual)	Ref

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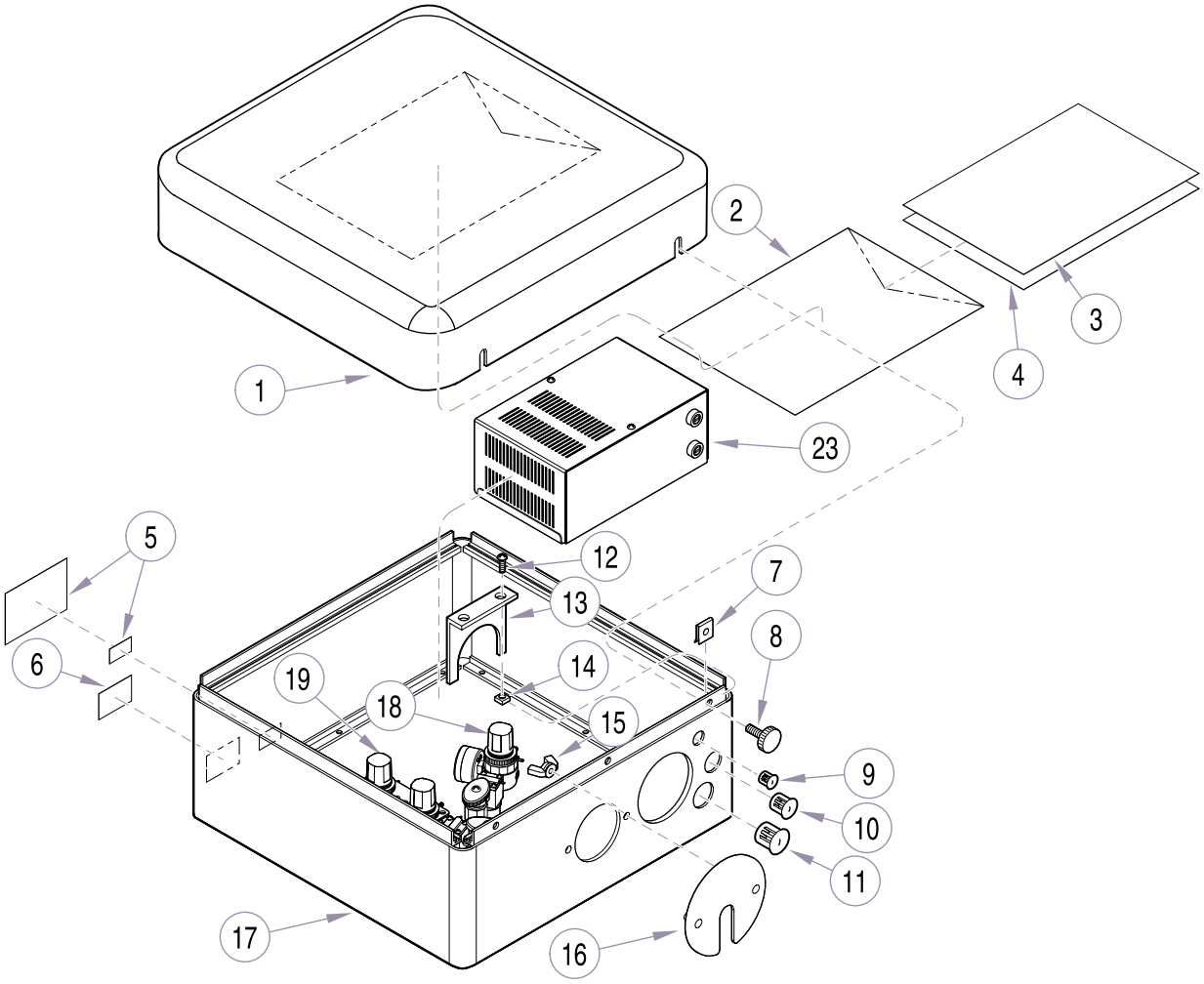
Square Junction Box



KA955701i4

Item	Part No.	Description	Qty
	153605-001	Square Junction Box (Includes Items 1 thru 22)	1
1	• 122394-01	• J-Box Cover	1
2	• 016-0882-00	• Vinyl Label Pouch	1
3	• 003-1130-00	• J-Box Flow Diagram	1
4	• 003-1136-00	• J-Box Wiring Diagram	1
5	•	• Serial Number Label	1
	• 061-0666-00	• Clear Laminate	1
6	• 061-0735-00	• ETL Label	1
7	• 121971	• “U” Fastener	4
8	• 153037	• Thumbscrew	4
9	• 120236-00	• 1/2” Plug Button	1
10	• 120227-00	• 3/4” Plug Button	1
11	• 121872-00	• 1” Hole Plug	1
12	• 040-0010-36	• Screw	2
13	• 122390-2	• Umbilical Retainer Bracket (Used with Typical Large Umbilical)	1
14	• 117358	• Nut	5
15	• 120997	• Wing Nut	2
16	• 029-2632-00	• Power Cord Cover Plat	1
17	• 029-2631-00	• J Box Frame Assembly, Large	1
18	• 029-2481-00	• Control Assembly, Water (Refer to “Water Control Valve”)	Ref
19	• 029-2480-00	Control Assembly, Air (Refer to “Air Control Valve”)	Ref
20	• 029-2597-00	• J Box Hook-Up Kit (Refer to “J Box Hook-Up Kit”) Not Shown	Ref
21	• 003-1118-00	• J-Box Installation Guide (Not Shown)	1
22	• 003-1111-00	• J-Box User’s Guide (Not Shown)	1
23		Power Supply Assy (Refer to Dental Light Service & Parts Manual)	Ref

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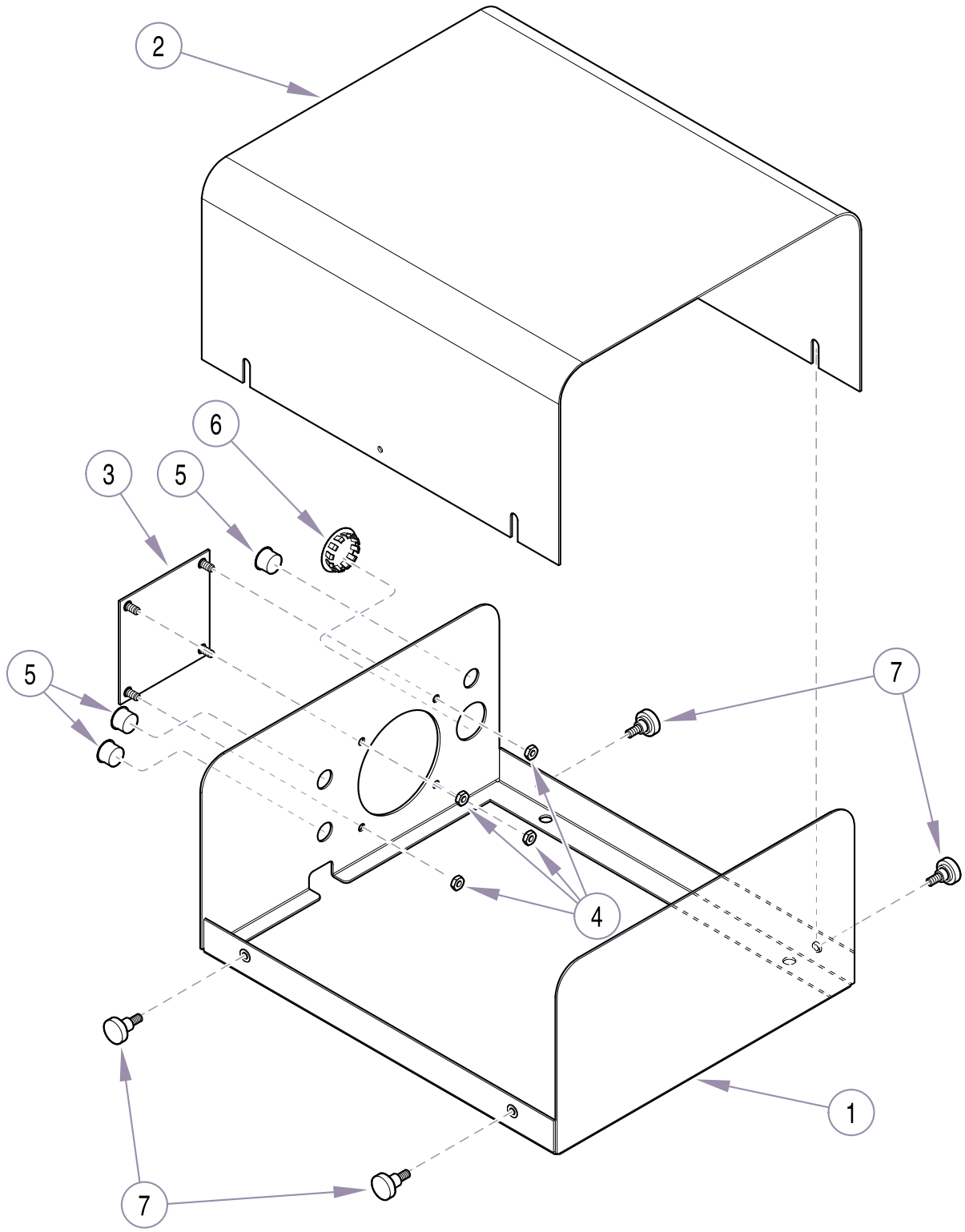
Small Junction Box



KA980600i5

Item	Part No.	Description	Qty
	029-2695-00	Small Junction Box (Includes Items 1 thru 7)	1
1	• 050-5068-00	• Small J-Box Chassis	1
2	• 050-5050-50	• Small J-Box Cover	1
3	• 050-5069-00	• Cover Plate	1
4	• P507	• Hex Nut	4
5	• 120236-00	• Hole Plug Button	3
6	• 121872-00	• Hole Plug	1
7	• 149730	• Thumbscrew	4

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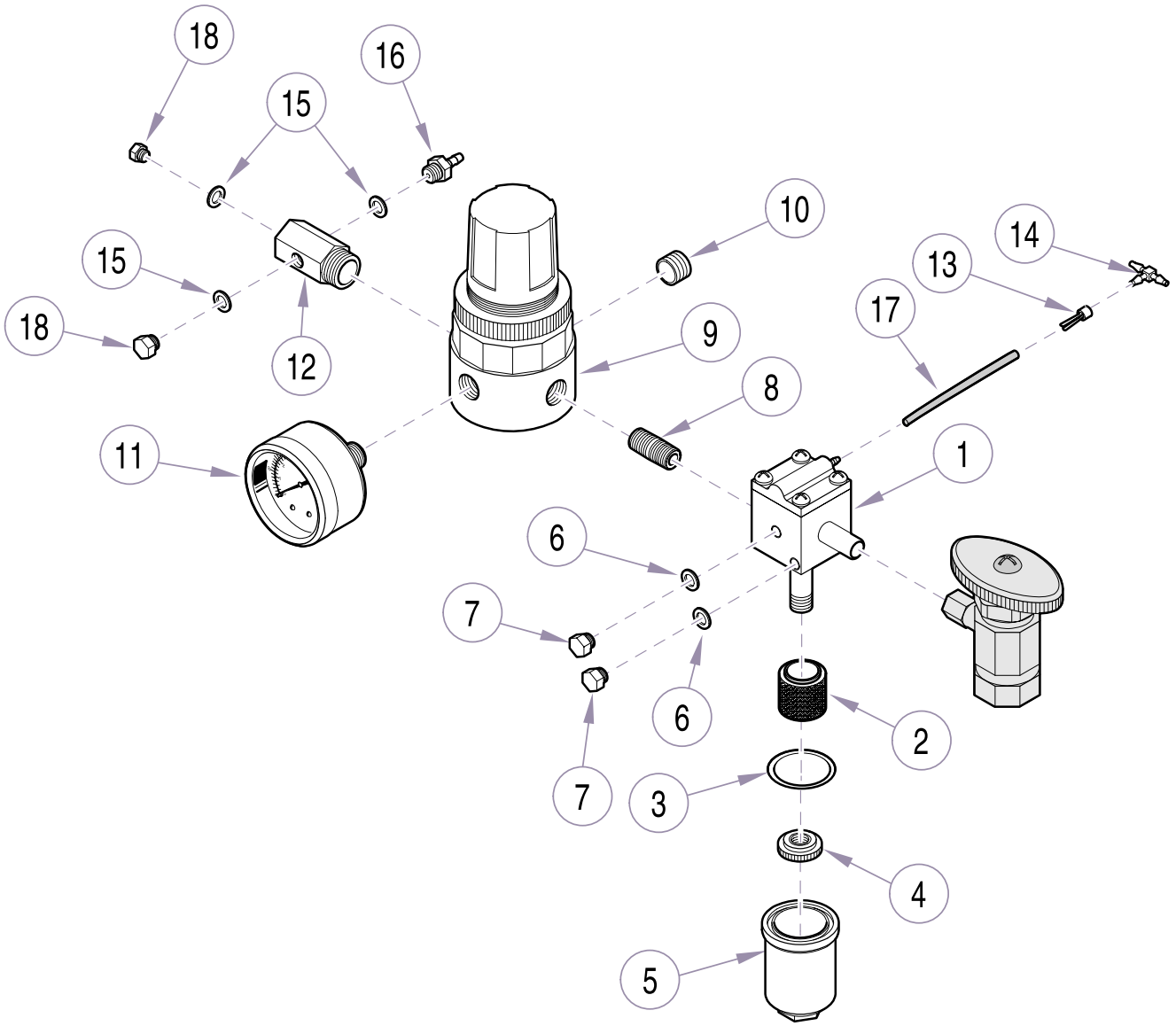
Water Control Valve



KA957500

Item	Part No.	Description	Qty
	029-2481-00	Water Control Assembly (Includes Items 1 thru 18)	1
1	• 029-2535-00	• Master Shutoff Valve Assembly (Includes Items 2 thru 7)	1
2	• • 053-1166-00	• • MSO Filter - 40 Micron	1
3	• • 014-0176-45	• • O-Ring	1
4	• • 057-0606-00	• • Filter Nut	1
5	• • 053-1167-00	• • MSO Filter Housing	1
6	• • 117660	• • Gasket	2
7	• • 117351	• • Brass Plug	2
8	• P16629	• Nipple (Apply Loctite #042-0024-00)	1
9	• 145349	• Water Regulator	1
10	• 117662	• Pipe Plug	1
11	• 122841	• Round Pressure Gage	1
12	• 117352	• Fitting	1
13	• 117479	• Uni-Clamp	1
14	• 117477	• Barb “T” Fitting	1
15	• 117660	• Gasket	3
16	• 109714	• Barb Fitting	1
17	• 177531	• Red Tubing	1
18	• 117351	• Brass Plug	2

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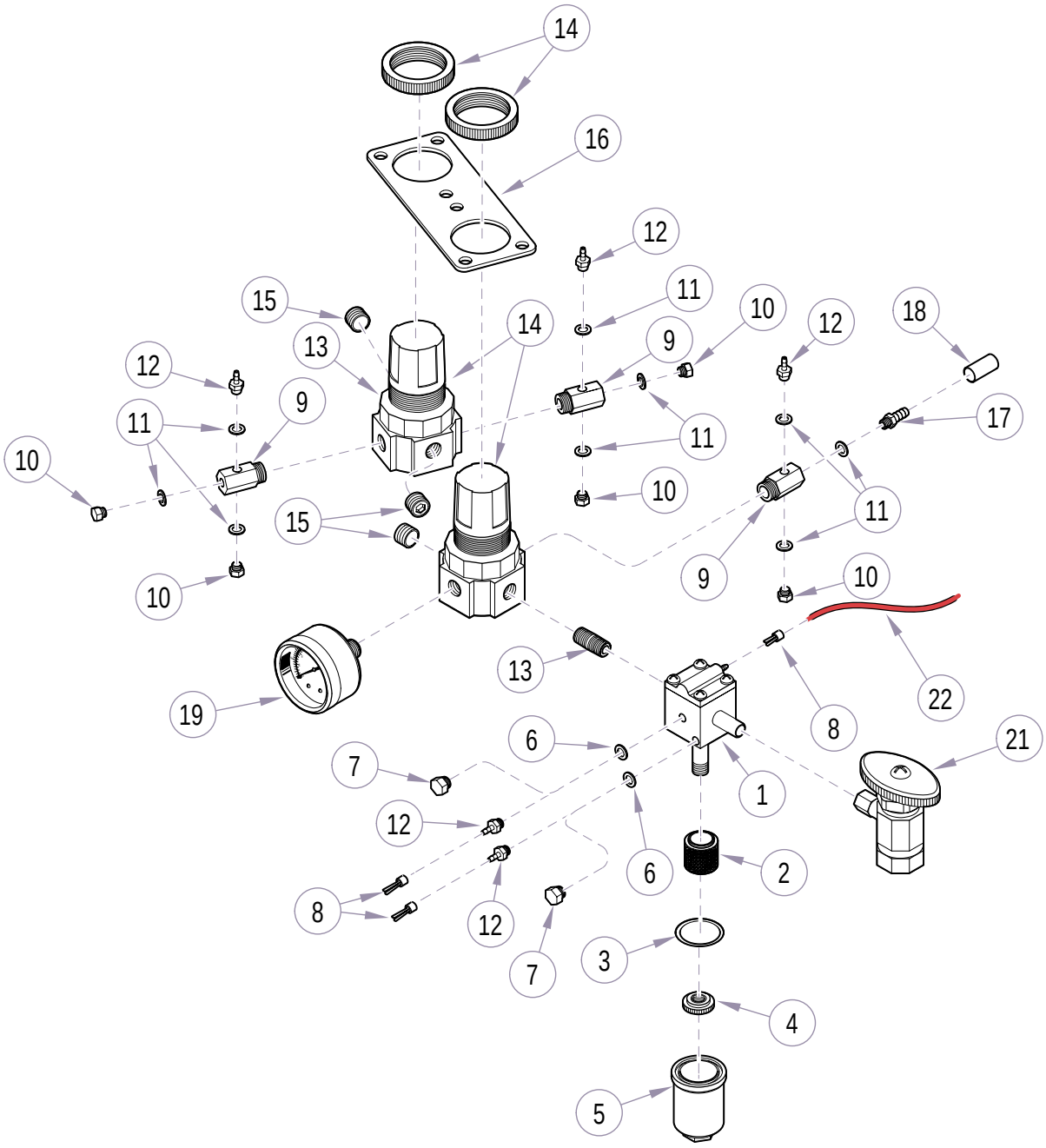
Air Control Valve



KA9574001

Item	Part No.	Description	Qty
	029-2480-00	Air Control Assembly (Includes Items 1 thru 21)	1
1	• 029-2535-00	• Master Shutoff Valve Assembly (Includes Items 2 thru 7)	1
2	• • 053-1166-00	• • MSO Filter - 40 Micron	1
3	• • 014-0176-45	• • O-Ring	1
4	• • 057-0606-00	• • Filter Nut	1
5	• • 053-1167-00	• • MSO Filter Housing	1
6	• • 117660	• • Gasket	2
7	• • 117351	• • Brass Plug (Not Used)	2
8	• 117479	• Uni-Clamp	4
9	• 117352	• Fitting	3
10	• 117351	• Brass Plug	5
11	• 117660	• Gasket	9
12	• 109714	• Barb Fitting	5
13	• P16629	• Nipple (Apply Loctite #042-0024-00)	1
14	• 145756	• Air Regulator	2
15	• 117662	• Pipe Plug	3
16	• 050-4816-00	• Regulator Mounting Plate	1
17	• 117349	• Fitting	1
18	• 177551	• Brown Tubing	1
19	• 122841	• Round Pressure Gage	1
20	• 120394	• Warning Tag (Not Shown)	1
21	• 121275	• Stop Valve	1
22	• 177531	• Red Tubing	1

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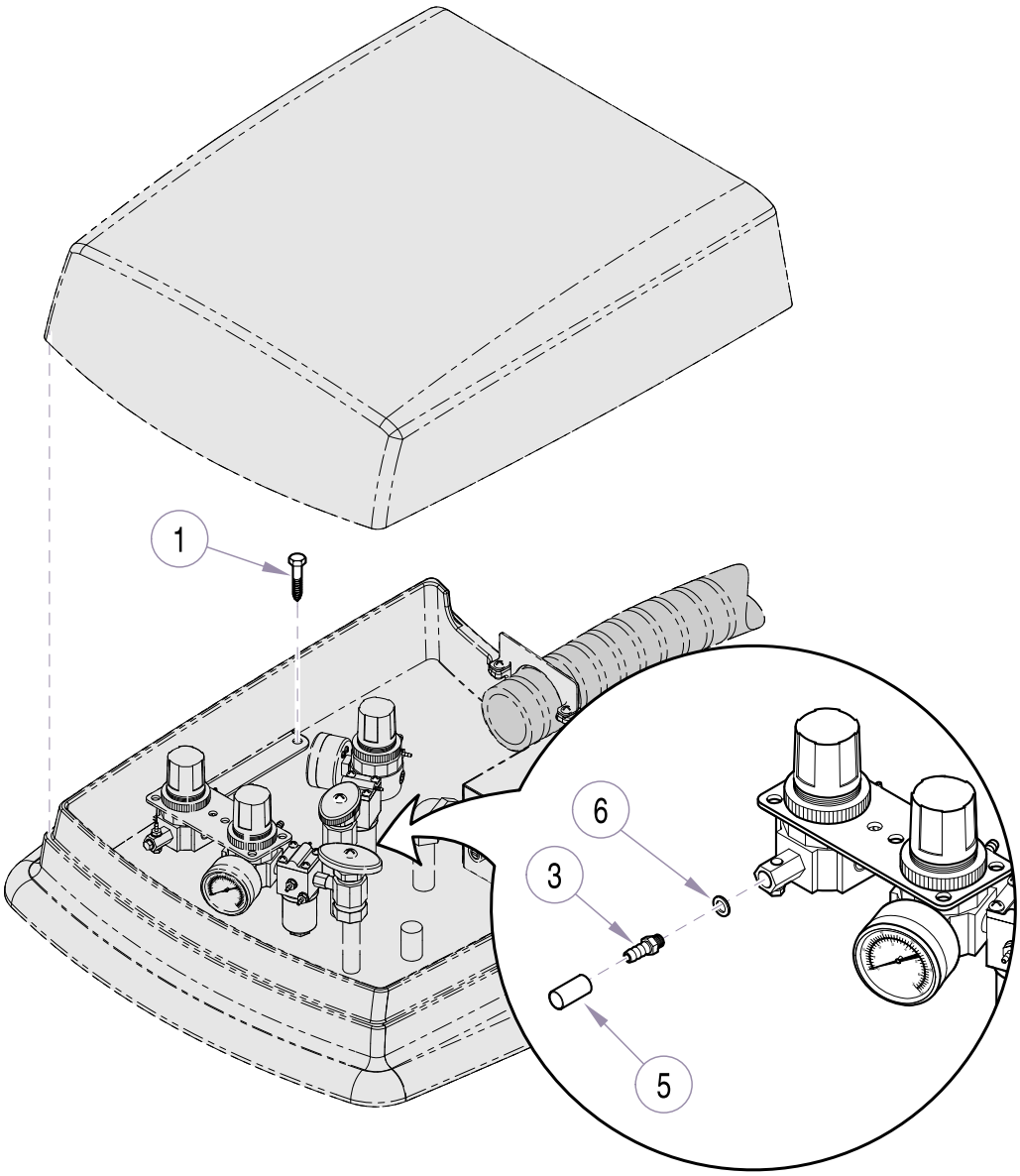
J-Box Hook-Up Kit



KA957600

Item	Part No.	Description	Qty
	029-2597-00	J-Box Hook-Up Kit (Includes Items 1 thru 9)	1
1	• 106009	• Screw	4
2	• 102308	• Cable Tie (Not Shown)	3
3	• 117349	• Fitting	1
4	• 117479	• Uni-Clamp (Not Shown)	9
5	• 117480	• Sleeve Clamp	4
6	• 117660	• Gasket	1
7	• 117481	• 1/16 to 1/16” Barb (Not Shown)	2
8	• 117482	• 1/8 to 1/8” Barb (Not Shown)	1
9	• G15000181	• Lubriplate (Not Shown)	1

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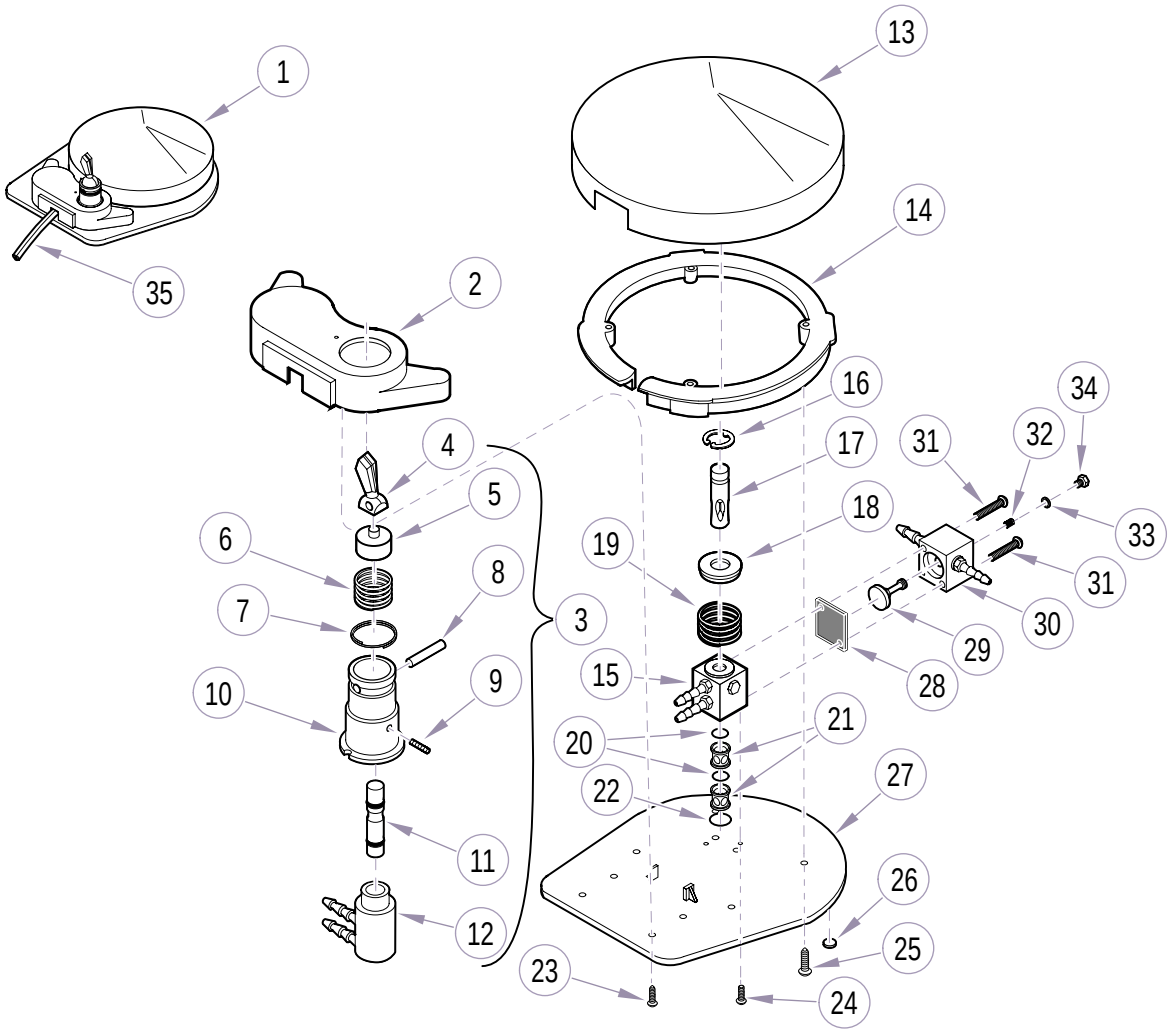
Foot Control Assembly



KA950400

Item	Part No.	Description	Qty
1	153617	Foot Control Assembly (Includes Items 2 thru 35)	1
2	•	• Switch Housing, 1-Hole Toggle (DCI#6052)	1
3	•	• Wet/Dry Toggle Assembly [DCI#6132] (Includes Items 4 thru 12)	1
4	• •	• • Toggle, Wet/Dry [DCI#6049]	1
5	• •	• • Spring Cap [DCI#6054]	1
6	• •	• • Spring [DCI#6036]	1
7	• • C5970	• • Spring Clip	1
8	• •	• • Pin [DCI#0911]	1
9	• •	• • Set Screw [DCI#9789]	1
10	• •	• • Valve Tower [DCI#6048]	1
11	• • •	• • • Stem w/O-Rings, 2-Way [DCI#6039]	1
12	• •	• •Micro-Valve 3-Way, [DCI#6004]	1
13	•	• Foot Control Cover [DCI#6070]	1
14	•	• Foot Control Ring, Gray [DCI#6046]	1
15	•	• Valve [DCI#] (Includes Items 16 thru 22	1
16	• •	• • Retaining Ring [DCI#9602]	1
17	• •	• • Stem w/Retaining Ring [DCI#6096]	1
18	• •	• • Return Ring [DCI#6033]	1
19	• •	• • Spring [DCI#6042]	1
20	• •	• • O-Ring Kit [DCI#2205] (Unit Uses 2)	pkg-12
21	• •	• • Spool [DCI#6022]	1
22	• •	• • O-Ring Kit [DCI#2210] (Unit Uses 1)	pkg-12
23	•	• Screw [DCI#9750]	4
24	•	• Screw [DCI#9741]	2
25	•	• Screw [DCI#9746]	4
26	•	• Bumper Pad Kit [DCI#8070] (Unit Uses 10)	pkg-28
27	•	• Base Plate [DCI#]	1
28	•	• Diaphragm [DCI#9012]	pkg-10
29	•	• Stem with O-Rings [DCI#6098]	1
30	•	• Valve [DCI#]	1
31	•	• Screw [DCI#]	2
32	•	• Spring [DCI#9029]	1
33	• 117660	• Gasket	1
34	• 117351	• Brass Plug	1
35	•	• Pebble Grey Tubing [DCI#19661]	1

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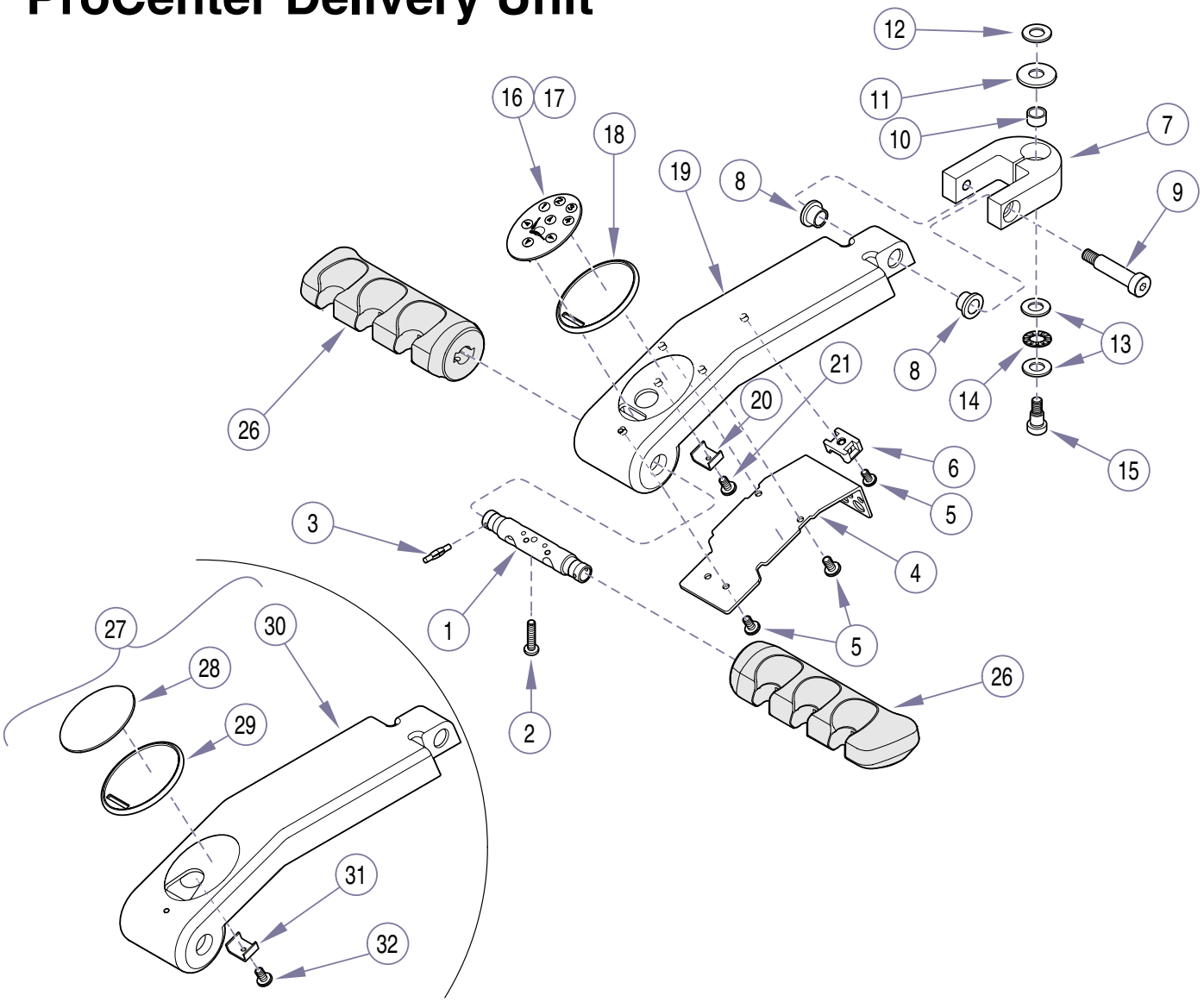
12:00 Casework Mounted ProCenter Delivery Unit



KA998603i

Item	Part No.	Description	Qty
	029-2782-00	Doctors Instr. Holder Assy. *(includes items 1 thru 15)*	
1	• 057-0753-00	• Instrument Holder Connector	1
2	• 040-0010-44	• Screw	1
3	• 042-0043-13	• Grooved Pin	2
4	• 050-5271-50	• Bottom Cover	1
5	• 040-0010-109	• Screw	5
6	• 016-0889-00	• Cable Tie Mounting Platform	1
7	• 051-0989-50	• Mount Block	1
8	• 016-0131-08	• Flange Bearing	2
9	• 042-0014-28	• Shoulder Bolt	1
10	• 016-0149-02	• Bronze Bearing	1
11	• 053-1159-00	• Thrust Washer	1
12	• 045-0001-01	• Washer	1
13	• 120712	• Thrust Washer	2
14	• 110207	• Needle Bearing	1
15	• 117471	• Coated Shoulder Bolt	1
16	029-2789-00	Chair Control Touch Pad Kit *(incl. items 17 thru 21)*	1
17	• 002-0672-01	• Touch Pad *(incl item 18)*	1
18	• • 053-1071-01	• • Control Bezel	1
19	• 020-0232-51	• Instrument Arm [w/Chair Control]	1
20	• 050-5336-00	• Bezel Retainer	1
21	• 040-0006-98	• Screw	1
22	• 029-2827-03	• Hardware Kit *(not shown)* *(includes items 23 thru 25)*	1
23	• • 015-0789-02	• • Bushing *(not shown)*	1
24	• • 015-1570-00	• • Wire Harness [15' ext.] *(not shown)*	1
25	• • 015-1571-00	• • Wire Harness [to chair PC board] *(not shown)*	1
26		Refer to: "ProCenter Instrument Holder Components"	Ref
27	029-2790-00	Instrument Arm [w/o Chair Control] *(incl. items 28 thru 32)*	1
28	• 061-0753-00	• Bezel Cover	1
29	• 053-1071-01	• Control Bezel	1
30	• 020-0232-51	• Instrument Mount [w/o Chair Control]	1
31	• 050-5336-00	• Bezel Retainer	1
32	• 040-0006-98	• Screw	1

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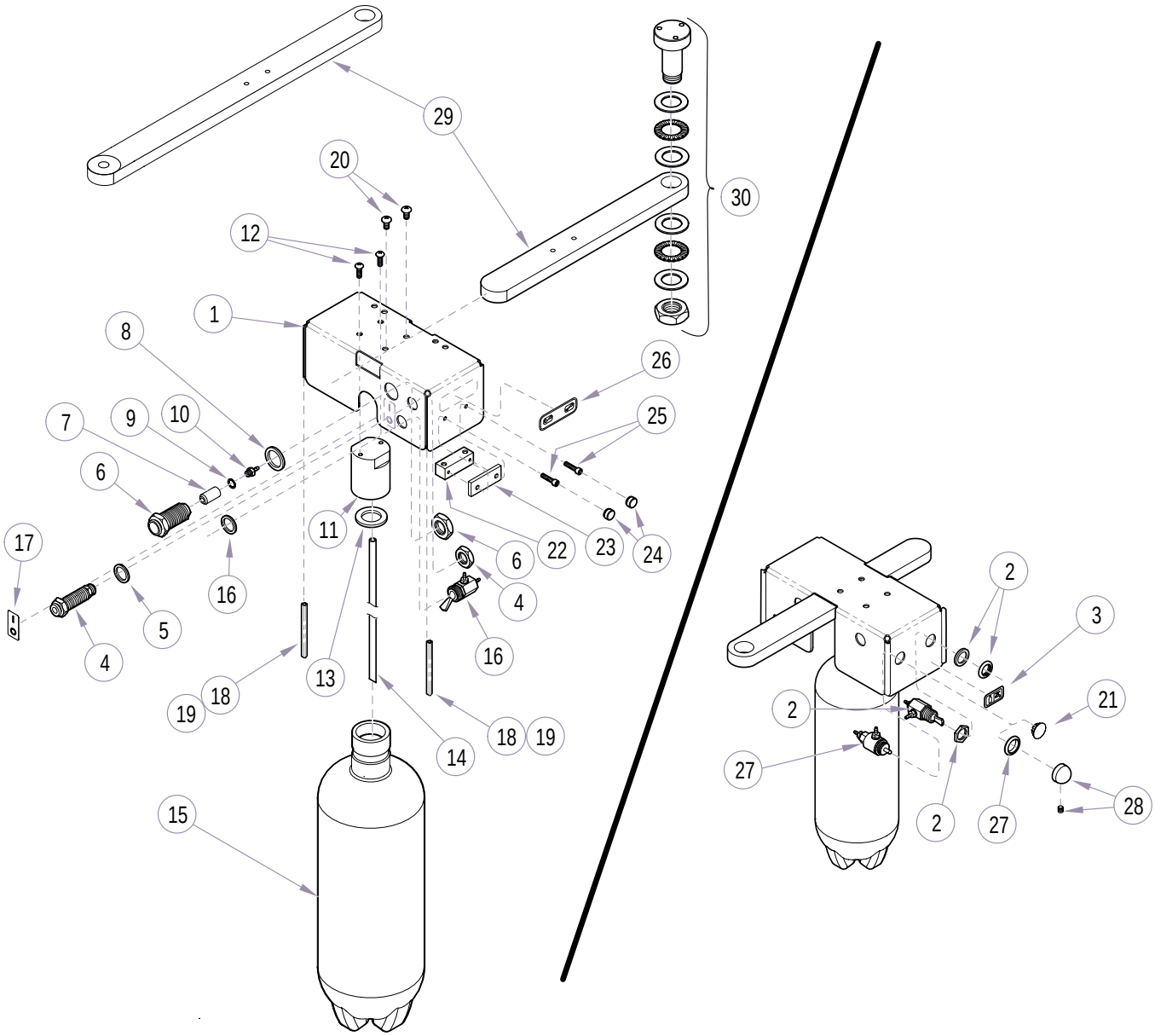
Water Bottle Assembly
(12:00 Casework Mounted Units)



KA997900i

Item	Part No.	Description	Qty
	029-2783-00	Water Bottle Assy(Includes Items 1 -- 21	
1	• 050-5279-50	• Water Bottle Bracket	1
2	• 029-2496-01	• Toggle Switch Assy	1
3	• 061-0780-00	• L/R Water Selector Label	1
4	• 137258	• Panel Mnt. Tube Coupler w/Shut-off	1
5	• 121807	• Washer	1
6	• 121107	• Panel Mnt. Tube Coupler w/Shut-off	1
7	• 121108	• Kwik Connect Adaptor	1
8	• 121181	• Washer	1
9	• 117660	• Gasket	1
10	• 109714	• 1/16 Barb Fitting	1
11	• 153276	• Cap Assembly	1
12	• 120385	• Screw	2
13	• 120393	• Gasket	1
14	• 177524	• Tubing	AR
15	• 122302	• Water Bottle	1
16	• 120169	• 3-Way Toggle Valve	1

Item	Part No.	Description	Qty
17	• TPW1351	• On/Off Label	1
18	• 053-1271-01	• Grommet	4
19	• 275392	• Adhesive	AR
20	• 040-0010-109	• Screw	2
21	• 121969-50	• Plug	AR
22	• 051-0990-00	• Pinch Valve Block	1
23	• 042-0075-02	• Foam Tape	AR
24	• 120599	• Thumb screw Knob	2
25	• 040-0004-14	• Screw	2
26	• 061-0780-00	• Assistant Syringe Label	1
27	• 029-2453-00	• Purge Control Valve	1
28	• 029-2529-00	• Valve Knob assy (incl. set screw)	1
29	•	• Vacuum Instrument Arm (Refer to "Vacuum Instrument Arm Assy")	Ref.
30	•	• Mounting Post (Refer to "Vacuum Instrument Arm Assy")	Ref

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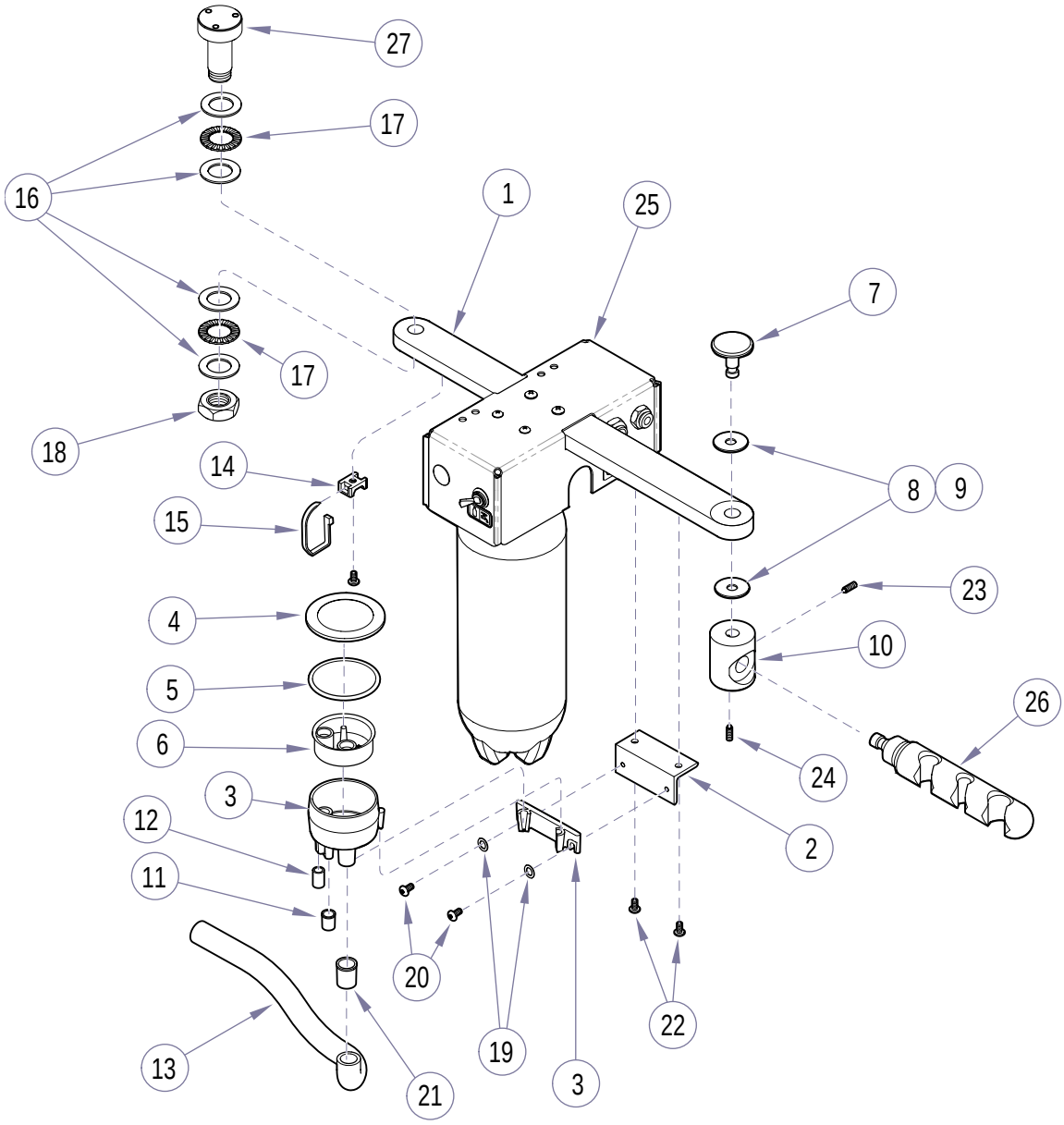
Vacuum Instrument Arm Assembly
(12:00 Casework Mounted Units)



KA998000i

Item	Part No.	Description	Qty
	029-2778-00	Vacuum Instrument Arm Assembly	
1	• 051-0988-50	• Instrument Holder Arm	1
2	• 121190-50	• Solids Collector Mount Bracket	1
3	• 151689-01	• Solids Collector Housing Assy	1
4	• 119897-01	• Solids Collector Top Cover	1
5	• 118614	• Solids Collector O-Ring	1
6	• 118613	• Solids Collector Basket	1
7	• 121024	• Arm Holder Pin	1
8	• 185171	• Grease	AR
9	• 121025	• Nylon Washer	2
10	• 121023-50	• Mount Holder	1
11	• P15280	• Solids Collector Sleeve Cap	1
12	• 118917	• Solids Collector Cap Plug	1
13	• S059-00126	• Corrugated Tubing	AR
14	• 016-0889-00	• Cable Tie Mount	1
15	• 102308	• Cable Tie	1
16	• 119034	• Thrust Washer	4
17	• 119033	• Thrust Bearing	2
18	• 041-0750-02	• Nut	1
19	• P1673	• Washer	2
20	• P17928-2	• Screw	2
21	• 121507	• Bushing Adapter	1
22	• 040-0010-109	• Screw	1
23	• 120913	• Set Screw	3
24	• 121148	• Set Screw	1
25		Water Bottle Assy (Refer to "Water Bottle Assy")	Ref.
26	122979	Handpiece Holder(3-Position-shown)	1
	122980	Handpiece Holder(4-Position-not shown	1
27	057-0703-00	Instruments Pivot Pin	1

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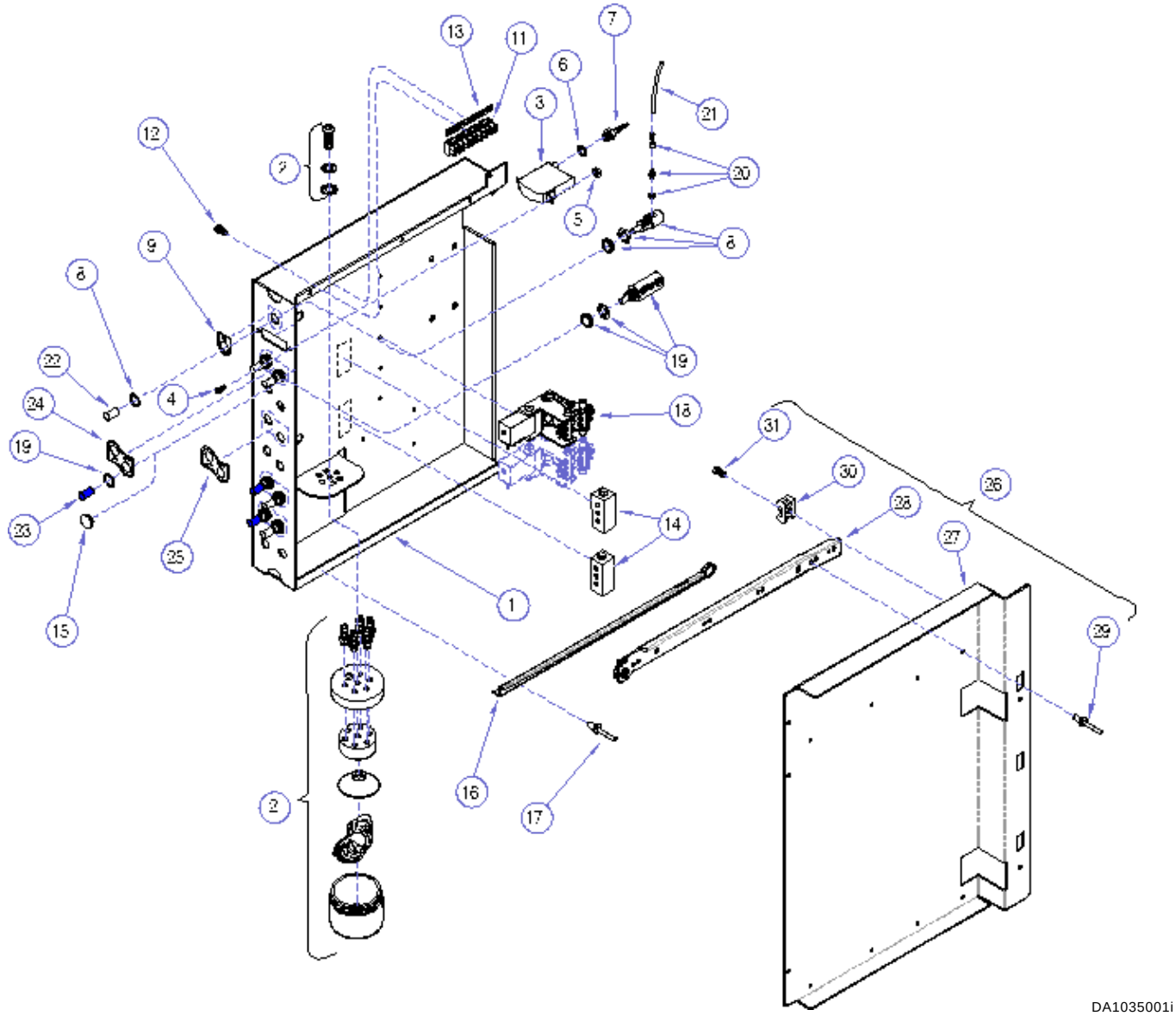
Delivery Unit Control Panel
(12:00 Casework Mounted Units)



DA1035001i

Item	Part No.	Description	Qty
	029-2760-00	Delivery System Control	
1	• 050-5200-50	• 12:00 Control Panel	1
2	• 029-2451-00	• Air/Oil Sepertaor Assy (Refer to "ProCenter Air/Oil Seperator Assy")	Ref
3	• 016-0839-01	• Pressure Gauge	1
4	• 040-0006-98	• Screw	2
5	• 111102	• Nut	2
6	• P12575	• Lock Washer	2
7	• 109714	• Barb Fitting	1
8	• 029-2449-01	• Air Control Valve	AR
9	• 061-0821-00	• Control Air Label	1
10	• 053-1165-00	• Fluted Control Knob	AR
11	• 015-1457-00	• Terminal Block	1
12	• 040-0006-80	• Screw	2
13	• 061-0795-00	• Terminal Strip Label	1
14	• 029-2585-00	• Manifold Assembly	2
15	• 121969-50	• Hole Plug	AR
16	• 016-0811-01	• Drawer Runner	2
17	• 042-0010-15	• Pop Rivot	6

Item	Part No.	Description	Qty
18	029-2429-00	Kink Valve (Refer to "Procenter Kink Valve Assembly")	Ref
19	029-2450-00	Water Control Valve	AR
20	•	• Connector (Refer to "Connectors & Fittings")	AR
21	•	• Tubing (Refer to "Internal Tubing")	AR
22	053-1165-00	Fluted Control Knob	AR
23	053-1165-01	Blue Fluted Control Knob	AR
24	061-0822-00	Doctors Syringe Label	1
25	061-0776-00	Water/Air Control Label	AR
26	029-2821-00	12:00 Controls-Slide Mount (includes items 27 thru 31)	1
27	• 050-5313-50	• Cabinet Mount Plate	1
28	• 016-0811-02	• Drawer Slide 550mm	2
29	• 121242	• Nut	8
30	• 016-0889-00	• Cable Tie Mounting Platform	1
31	• 040-0010-109	• Screw	2
32	• 040-0006-23	• Screw	8

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SECTION VI
PARTS LIST

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FAX ORDERING FORM

(SERVICE PARTS ONLY)

NOTES:

- **ALL BLOCKED AREAS MUST BE COMPLETED.**
- **USE FOR NON-WARRANTY FAX ORDERS ONLY. WARRANTY ORDERS MUST BE TELEPHONED IN (1-800-MIDMARK).**

ATTENTION: SERVICE DEPARTMENT FAX#: 877-249-1793

ACCT #: _____ **P.O. #:** _____ **DATE:** _____

NAME: _____ **SHIP TO:** _____

ADDRESS: _____

CITY, ST.: _____

CONTACT: _____

PHONE: _____

☐ **NON-EMERGENCY ORDER - TO SHIP WITHIN 72 HOURS IF PART(S) IN STOCK.**

☐ **EMERGENCY ORDER - TO SHIP WITHIN 24 HOURS IF PART(S) IN STOCK (IF ORDER IS RECEIVED BEFORE 1:30 P.M. E.S.T).**

SEND NOTIFICATION IF PARTS ARE NOT AVAILABLE TO SHIP WITHIN 24 HOURS VIA E-MAIL OR FAX TO: _____

METHOD OF SHIPMENT

OTHER _____

UPS	FED EX
☐ NEXT DAY A.M.	☐ NEXT DAY A.M.
☐ NEXT DAY P.M.	☐ NEXT DAY P.M.
☐ 2ND DAY	☐ 2ND DAY
☐ GROUND	☐ ECONOMY

QTY.	PART #	DESCRIPTION (SPECIFY COLOR OF ITEM IF APPLICABLE)	COLOR CODE	PRICE/PER

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